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ORIGINAL ESSAYS AND CASES.

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ART. I.—*Cases of Mercurial Disease, with reflections.* By JOHN P. HARRISON, M. D. *Lecturer on Clinical Medicine in the Louisville Hospital, Kentucky.*

In the summer of 1821, I attended in conjunction with Dr. Smith, the patients of a small temporary hospital, which had been opened by the citizens, for the poor of the town. There were carried to this house a woman and her child, both very ill. The child had been sick with fever previously to admission, and had taken one dose of calomel, according to a physician's order. The physician directed the mother, for she was able at that time to attend to her child, to give it as much cold water as it wanted. It drank a large quantity, just from the well.

In a few days, its mouth became sore, the mother then being ill, it was neglected. About the fifth day, when a small black spot had appeared on the cheek externally, it was brought to the hospital. Upon examination it was discovered that the inner surface of the cheeks was black, the lips were swollen and seemed to have, in the corners of the mouth, become gangrenous. Several remedies were used to arrest the mortification, but it continued, till the whole left cheek

seemed to have passed into a state of complete sphacelus.—In a few days it died in a comatose state.

The cold water in this case unquestionably caused the mischief. I have seen another case which happened in the practice of a respectable physician where the child was saved, with the loss of the teeth, and a portion of one cheek.—He employed a blister over the cheek, when he perceived the red spot, the forerunner of the gangrene; used charcoal to get rid of the fetor, maintained the temperature of the skin, and kept the bowels open. The child was nourished principally with soup.

In the summer of 1822, I was called to see a gentleman affected with a violent attack of the terrific epidemic, which then desolated our town. His constitution was uncommonly vigorous; he was a native of a northern part of the United States, and was habitually temperate. I bled him copiously, his family being alarmed another physician, a gentleman of talents, was called in, to attend with me. I was taken sick, and he managed the case for a short time, alone. He pursued the plan, which in consultation we had adopted, and which was the mercurial. The patient took several hundred grains of calomel, conjoined with opium in small doses, and had the mercurial inunction faithfully put in requistion.

After my recovery I visited him, at the request of the third physician who had been called in, the second having, been seized with fever.

The patient was then affected with mercurial ulcers in the mouth and throat, his discharges were very dark coloured, and the powers of his system were much reduced. The remedy had not excited ptyalism, and the ulceration came on after the remedy had been discontinued for several days.—He finally died from an extension of the ulceration through the entire intestinal tube as the symptoms indicated—the alvine evacuations being sanguineous, before death.

In the year 1825, a man named Hamilton, was admitted into the Louisville Hospital, affected with a very extensive cutaneous disease. Not being in attendance, I was invited

to see the case. The patient, a boatman, and formerly a British seaman, was well previously to this eruption, and still continued to enjoy good general health. The whole surface of his body was more or less covered with the eruption, but it was greater on the trunk and head than the extremities.—When he pulled off his shirt, the scales fell around him like snow-flakes. On the scrotum, and the inner part of the thighs in contact with the scrotum, there were superficial ulcers.—His glans penis was sound, the inguinal glands were indurated and enlarged to a small degree. He told several different tales, concerning his previous situation and thus increased the perplexity of the medical gentlemen, who sought to ascertain the precise nature of his malady. Some of them thought it lepra vulgaris; while others considered it a good specimen of general herpes. Several, with myself, in reflecting on the patient's habits, general health, and the character of the eruption, were convinced, that it was syphilitic. To strengthen this opinion, I referred the gentlemen to Carmichael, where he says, "the true syphilitic eruption is scaly; a circumstance by which it may be distinguished from the eruptions of the other forms of the venereal disease, which we have seen are either papular, pustular, or tubercular."* Candor urges me, however, to state, that upon further investigation, I find that this distinguishing criterion is not confided in by a very high authority.

S. Cooper, in the last edition of his valuable Surgical Dictionary, makes the following remarks: "There is as little certainty, about the essential characters of a syphilitic eruption, as about the test of every other symptom of the venereal disease, or rather diseases." "It must be allowed, that it is frequently very difficult to say, whether an eruption is syphilitic or not, and an opinion should rather be formed from the history of the case, than from any particular appearance of the eruption itself. "Dr. Hennen, in his valuable book, does not pretend to be able to discriminate the true syphilitic erup-

*Carmichael on Venereal Diseases, Emersons Edition p. 292.

tions from others, and indeed by what criterion they are to be known, I am myself entirely puzzled to comprehend, after the numerous facts, so fully established by recent experimental inquiries."*

In lepra there is an impairment of general health; and this not being the case in our patient, we feel warranted in pronouncing it not to be leprous.

Herpes is a vesicular disease, and therefore totally unlike this eruption. Finally the man acknowledged to the steward of the institution, that he had been exposed to the chance of contracting syphilis but a few weeks before. The physicians then in attendance, however, regarded it as not venereal and prescribed accordingly. Their remedies were both internal and external; and one of the latter was the black wash or calomel and lime water. Under this treatment, the patient grew worse.

Several ulcers appeared on the breast, and the axiliary glands became enlarged. In this condition, after a lapse of about four weeks, he fell into the hands of a physician who considered it syphilitic. This gentleman put him on the mercurial plan, giving the blue pill at first and after that calomel. In a few weeks he was under the full impression of the mineral. After the mercurial action became established, the eruption in places changed into what Mr. Hunter terms cutaneous ulcerations, spreading, or phagedenic ulcers. He was treated with cicuta, purgatives, &c. by the physicians who attended, but nothing seemed to impart a curative disposition to the ulcers. About six months after his admission into the hospital, I saw him whilst under the care of another gentleman; at this time he had ulcers on the breast, on the arms, on the thighs, and a large one on the back of the neck; in all, about eighteen or twenty.

His face was red, with an eruption around the nose; and a violent head ache was present at times. Another physician, who succeeded the one last mentioned, employed Fow-

*See article Venereal Disease, Vol. 2.

ler's solution of arsenic, internally, and dressed the ulcers with citron ointment, weakened with lard, and under this practice he was cured.

But his limbs were tremulous from long inaction; and his general health was not vigorous. In this state he was discharged in the winter, or early in the spring. In a few weeks he returned, with ulcerations in the different parts of the body, and a great redness and tumefaction of the nose. In a short time ulceration took place in the left ala nasi, which destroyed a portion of it, before it could be arrested.

The arsenic was again employed and again did great good. The medical gentleman, thought it affected the patient's head, and had recourse to Swaim's Panacea; which he thought was of great efficacy. The man, after having been upwards of twelve months in the Hospital, and been the patient of five physicians, left it with an ulcer still remaining on one of his feet.

Such is a brief outline of this very puzzling and protracted case. I will cite one more, and then offer some deductions from the whole.

Last summer I was called to attend a very athletic young gentleman with slight fever, accompanied with great fulness of the cerebral vessels. He was bled repeatedly, and purged with mercurial and other cathartic medicines. Contrary to directions, he used cold water both internally and externally. His mouth became slightly sore, when I repeated the cautionary precepts about the use of cold fluids. His head being yet painful at times, he could scarcely be restrained from bathing it with cold water. He recovered and went home, a few miles into the country.

There he was imprudent, going through the fields, whilst wet with dew, and laying on the grass in the evening. In about five or six weeks, after his departure from town, he called on me with rhuematism, or pains similar to the chronic form of that disease. I gave him some medicines, which he did not take very faithfully. In the course of a little time, eruptions came out on his skin, in different places. They

were inclining to a copper colour, not painful to any considerable degree, and accompanied with tumours on several of the long bones. He grew worse, his throat became inflamed and suppurated, and he was rendered unable to use exercise, from several ulcers on the thighs and legs.

I prescribed arsenic internally, and directed him to wash his ulcers with diluted nitric acid, holding opium in solution. But this lotion did injury by irritating the sores. He became tired of my remedies and applied to another physician. That gentleman discontinued my remedies, though he agreed with me as it regarded the nature of the affection. He gave him sulphur internally, and ordered him to wash the sores with sugar of lead water. The patient grew worse and applied to me again.

I now found him with several very bad ulcers superficial and spreading. A dense scab was formed first, and then the ulceration commenced under it; and thus originated the phagedenic ulcers, which were rapidly forming on different parts of his body. I directed him to resume the solution of arsenic, fifteen drops three times a day gradually increased to thirty, in a tea spoonful of the tinct. guaiac. ammon. mixed with milk. Dressed his ulcerous excoriations with the common ungt. saturnin. of the Dispensatory. After persevering in this treatment about six weeks, his ulcers got well, and his nodes left him; but there remained a little efflorescence about his forehead. He now began to travel over his plantation, and would no doubt have remained well, if he had not exposed himself. But being rather reckless of his health, he engaged in fox hunting on a cold, windy and damp day. In a little time, I was again summoned to visit him, I found him labouring under a most excrutiating affection of the scalp, with symptoms of periostitis in the radius of the right arm. The eruption had not returned. By my advice he was bled several times, and after each bleeding took an anodyne. The blood letting did but little good, but the anodyne procured alleviation of the pain, by which he was enabled to take some repose.

After visiting him several times, and finding him no better I advised him to take an emetic of ipecac, every other day, for the purpose of restoring the healthy functions of the skin, and producing counter action on the intestinal canal by which the neuralgic affection of the scalp might be overcome. This he declined doing, and desired a consultation with Dr. Rogers. The request was readily complied with and having explained my views to the Dr. he agreed with me, both as regarded the pathology and practice of the case.

The patient took the emetics, sometimes twice, sometimes thrice a week; and after the operation of six or seven, his head-ache left him, the pain in the radius disappeared, and the skin resumed its healthy condition. During the intermediate days of using the emetics I gave him the Lisbon diet drink, with small doses of antimonial wine.

After getting out again, he had some lameness of the left knee—which seemed swelled and stiff, but this went off gradually. I have thus compressed as much as possible the above cases, for the purpose of laying before the reader a few data from which to deduce the following corollaries:

1st. That mercury has two modes of action, a local, and a general.

2d. That mercury operates on the living solids without entering the blood.

3d. That there is nothing so specific in the mercurial disease, as should deter us from pursuing a plan of practice, built upon our knowledge of inflammation, modified by texture.

4th. That to restore the secretions should be the ultimatum of all our prescriptions in such cases.

The first position as established by the cases above, is that the mercurial action may be either local or general, and that when the remedy acts as a local irritant, its general influence on the secretions is marred if not prevented.

Paris, in his excellent work has some judicious remarks to this effect, and he asks the question, "would it not appear that *powerful doses rather produce a local than a general effect.*" He illustrates the operation of medicines given in a large or small

dose by an anology which obtains in the agency of an impression on the skin if violent, local pain is produced, but if gentle, a general sensation is excited.

But a mercurial preparation, as calomel, may not only act locally on the stomach, and thus induce vomiting or purging, and in consequence of which local action have its general alterant impression prevented; but it may induce another kind of local irritation, entirely subversive of its best effects on the system; an irritation which may be considered essentially a disease created by the remedy.

The cases given above are illustrative of this opinion. In the child's case the operation of the calomel on the bowels and bilious secretion was interfered with by the cold water drank. It is a well known fact that salivation is peculiarly hazardous in children under eight years. It is impossible to produce it in very young children, and when mercury thus acts on children, it does not excite the salivary glands into increased secretion, but produces ulceration of the mouth—the gums quickly turn white, and recede from the teeth, which drop out; and mortification, if the disease be severe, soon seizes the inner part of the cheeks.

In the case of mercurial disease occurring in the fever patient, the remedy excited an action of a local and irritating kind. Whatever may be said against the employment of mercury in fever, I have never seen a case of bilious fever in which the general constitutional effects of the remedy took place, but which very soon was cured.

It appears to me, much confusion has existed in the minds of medical men as regards the efficacy of the mercurial action in the cure of fever.

Salivation may take place without the fever giving way. Here the remedy acts as a local irritant, and of course will not suppress the febrile symptoms. But whenever the general effects of mercury can be secured in fever, the secretions of bile, urine, and sweat are restored in consequence, and whether the salivary glands be acted on or not, the patient's life is safe. Fordyce has commented with much accuracy,

on the two fold agency of tartar emetic. He contends that when it nauseates in fever it does injury, by depressing the powers of the system, without arresting the march of the disease; but when given in very minute doses it promotes the secretions, and conducts the system back to its original type of health.

Digitalis has a similar mode of operation. The reader may consult Fordyce on Fever, and Paris' Phamacologia on this subject, with benefit. Mr. Hunter long since insisted, that the efficacy of mercury in the cure of syphilis, was dependent on its producing a counter-action in the different textures, which were the seats of the disease. Mathias, and Carmichael both lead us by their cases and reflections to the conclusion that unless the secretions are restored, mercury will not cure the venereal disease, in any of its forms. It is now generally conceded by the most enlightened surgeons and physicians, that every form of venereal affection may be cured without mercury. Carmichael insists on the employment of the remedy in all cases of the true chancre, followed by scaly eruptions; but S. Cooper, in the last edition of his Surgical Dictionary, says, that we are justified in asserting from the mass of documentary evidence collected during the peninsular war, that syphilis is curable, and is in fact cured in Portugal among the natives, without a particle of mercury. In cold climates the secretion of the skin is more difficult to be preserved; and as this is the main secretory outlet, through which the mercurial excitement is conducted, our assent must be given to the proposition, that mercury cures syphilis by exciting the secretions.

Carmichael positively denies, that mercury alone will produce symptoms analogous to venereal affection, such as sore throat, nodes, eruptions, &c. but thinks that in every case, there is a modified result of morbid action engendered by the syphilitic poison and mercury. He says that the medicine never produces these symptoms when given profusely in liver diseases. Mathias contradicts, in his statements, Carmi-

chael's assertion. My last case stands directly at antipodes with Carmichael's opinion. In warm climates mercury may be given with little comparative detriment to the constitution, because the cuticular function is preserved by the centrifugal action, which obtains in the animal economy, in a high atmospheric temperature. When we administer the remedy in liver affections in our climate the patient is generally kept confined to his room, where a careful dietetic as well as medical regimen are observed; by which means the skin is not disturbed in its functional activity. The way in which an exalted condition of the secretory emunctories cures disease, is by deriving or inviting action from the part affected to the secreting organs; now become centres of fluxions; and the soothing and tranquilizing influence exerted upon the nervous system by a restoration of suspended or impaired secretory action.

I believe that experience and induction will bear us out in the following axiom:—that unless the skin be excited into functional action, mercury never acts favourably on the constitution. Hence the importance of warm drinks, warm clothing, and equable atmospheric temperature, in conducting a mercurial process. Cold fluids drank after calomel is taken, act injuriously in two ways:

1st. By exciting irritative action in the stomach, thereby hindering the kindly cathartic effect of the remedy.

2d. By reducing the action of the capillary circulation of the skin.

As evidence that mercury does not enter the blood, it can neither be proved to exist in that fluid, nor is it discoverable in any of the secretions. That it operates on the organic sensibility of the stomach, skin, or lungs, (for through either of those surfaces it can be made to act constitutionally) by creating a peculiar impression which is radiated from thence over the system, is manifest from a bare enunciation of a few facts.

. The constitutional action of mercury is intimately connected with the condition of the system, as regards its vital prop-

erties. Now, if in a very weakened state of the vital forces, mercury always acted most promptly, then we might presume it entered the blood: for absorption is going on as actively in a state of debility as in a state of excitement, of course a much less quantity of the remedy would produce a greater effect in a prostrated, than in an excited condition of the system. Experience, however proves, that when the body is very much weakened, the remedy will not act. Take another fact, that it depends less on the quantity, than the preparation administered, to create the general agency of the mineral. A few grains of red precipitate sprinkled on an ulcer will sometimes salivate; a few grains of the deutochloride (coros: sublum.) will at times very promptly excite the same action. Large doses of the blue pill may be given for weeks and not induce the same effect. The union of opium and tart. emet. will accellerate the action of calomel, by favouring the developement of its appropriate action on the secretions. If the excitement be excessive, bleeding and catharsis have the same co-operating action, by increasing the susceptibility of the system to mercurial impression. For it is a familiar fact, that if the arterial excitement be in excess, the excitability, or organic sensibility of the organ is diminished, and consequently the mercurial influence will not ensue, till this undue action is lowered by depletion.

To give opium with calomel in fever is very bad practice, for opium arrests secretory action in most of the organs, and augments general fever. There is nothing peculiar in the inflammation produced by the irritating agency of mercury on the animal economy. Sulphur has been consecrated by the darkened views of humorilism to the cure of mercurial diseases, by the supposition that it acted chemically on the mercury in the blood. If it does good, it is by its action on the skin and bowels, and in no other way.

Physicians formerly seemed afraid to approach mercurial affections with the ordinary remedies for inflammation, but within a few years a better practice has obtained. The best method of curing mercurial sore mouth, is, if there be febrile

irritation present, to bleed, and then employ such general medicines, as will act on the secretions, especially the secretion from the surface of the body. In ordinary cases bleeding is not demanded, gentle emetics with opiates, to prevent their cathartic operation, and small doses of tart. emet. are in common cases the most successful. Cathartics are injurious by lessening the capillary circulation of the skin, thereby arresting the process of calorification, as carried on by the surface, and impairing its other functional powers. The bowels should be merely kept open. Blisters are useful remedies to arrest the inflammation. If the general strength be much prostrated, the warm bath, and Dover's powder given in small doses, are the most appropriate remedies. As to gargles, I put no sort of confidence in them: if they correct the fætor and render the patient more comfortable they may be used. In slight cases of mercurial sore mouth, diluted tinct. myrrh. with borax are the best applications, I have ever used. The last case detailed, shews that a mercurial eruption treated on general principles can be cured.

Arsenic has been commended by the Arabian authors as the best remedy in leprosy. It has a powerful action on the skin, and subcutaneous cellular tissue, as is evinced in its curing elephantiasis, and in producing serous effusions about the face, when given for any considerable time, particularly, to cure ague and fever. That arsenic produces violent irritation when applied to a part, none will deny. That it induces dropsical effusion, by increasing the exhalation from the capillaries of the subcutaneous cellular tissue, is evident from the fact that the effusion takes place in a part of the body, where the power of the heart in circulating the blood is great, the circulation being more vigorous in the face than in the extremities.

The truth is, that serous effusion is one of the terminations of excessive capillary action, and should never be regarded as the result of debility, or mere mechanical transudation of serum from the blood The employment of arsenic in phagadenic ulcers still is not novel; Carmichael mentions its utility.

There are, perhaps, few remedies in the Materia Medica which more urgently act on the secretory function of the skin than emetics. In the case detailed above I preferred the Ipecac, as it acts more directly on the stomach, with less hazard of spasmodic pain, and less subsequent debility of that organ, than are produced by tart. emetic. When we have to repeat the remedy very often, the above considerations, are entitled to much attention.

I have thus in a rapid manner, touched at the most interesting points in the above detailed cases, and presented to the reader the deductions which arose in my mind upon reviewing them. I have not perhaps, in every instance traced opinions to their first authors, because in a progressive and improving science, like that of medicine, it is not possible to say what amount of information we derive from each author, nor can we always with precision, refer originality of thought to its first source.

ART.—II. *Extracts from a dissertation on the Bilious remittent Fever, as it prevailed in the Town of Hamilton and its vicinity, in the State of Ohio, during the summer and autumn of* 1824—*read pursuant to appointment before the 2d. District Medical Society of Ohio—Nov.* 1824. BY JOHN C. DUNLAVY, M. D.

Bilious remittent Fever is the most common epidemic of our country, and one to which many persons annually fall victims. Every thing, therefore, calculated to increase our knowledge of its nature, or point out the most successful method of treatment, is of the highest importance, not only to the profession but to society at large. It is even at this period a subject of serious and important enquiry, how far the disease is necessarily fatal, and how far it becomes so from an inefficient or improper method of cure. Constituted as we are, by the necessities of society, the guardians of human life, it is incumbent upon every member of the profession to ascertain, as far as possible, the precise character of every disease that is submit-

ted to his observation, and the causes which lead to its fatal termination. In proportion to the frequency of its recurrence, and the fatality of its character, his responsibility increases, and his exertions should be augmented.

During the summer and autumn of the present year, we have had every grade of fever, from the simplest intermittents to the most fatal remittents. The predominant character of the disease, was redundant or vitiated biliary secretion, and a high degree of inflammatory action, connected with congestion and inflammation in some of the viscera. In all violent cases that fell under my notice, these two states of the system were conjoined, apparently resulting from and producing each other. Mild cases unattended with inflammation or congestion, had nothing peculiar in their character or difficult in their treatment, and are, therefore, not to be noticed in the present paper. I shall not detain you with a minute detail of the symptoms of the disease, even as it appeared in its severest form: it is necessary, however, to take a view of some of the most prominent.

The disease was frequently ushered in by a chill, and a succession of chills was not uncommon, especially during the first few days succeeding the attack, or after symptoms of amendment had occurred, when it was on the decline. Several of the most violent cases, however, preserved a remittent character throughout. In some cases the patients complained of pain in the head, sickness of the stomach, occasional vomiting, and bitter taste for several days previously to the occurrence of a chill. If examined at this time their tongues would be found more or less furred, with some frequency of the pulse. During the epidemic I met with persons having a furred tongue, who were not aware of any indisposition. That symptom, however, foreboded an attack of fever which most certainly, sooner or later, occurred, unless prevented by a timely use of evacuant medicines.

The symptoms during the cold fit were different, according to the stage or type of the fever. In some cases the patient complained of little more than a sensation of coldness,

principally affecting the extremities, thirst and dryness of the mouth, and some degree of nausea or vomiting. But in the worst cases there was superadded to these, anxiety, and a sense of stricture across the chest, a constant sighing and ghastly appearance of the countenance. These symptoms were the precursors of a violent paroxism of fever, during which, the anxiety and oppression about the præcordia, became more considerable, the sensation of stricture was then changed to an intolerable load, or burning pain in the region of the stomach. A distress about the heart was felt to a degree, which the patient seemed incapable of expressing, and which kept him perpetually tossing his limbs and rolling from side to side; his respiration being anxious, and frequently interrupted by deep and heavy sighs. The stomach in these cases was highly irritable, rejecting every thing taken into it and sometimes throwing up a dark, vitiated, bilious matter, which in one or two cases was as black as ink.

The tongue, at the commencement of the disease, was in general thickly coated with yellow fur, assuming a brown as the disease advanced, and in the worst cases becoming perfectly black. In other cases, it was entirely clean but brown, and parched, exhibiting a glossy appearance not unfrequently with deep chaps on its surface. In several cases, I observed the tongue to become clean and moist without any abatement of the other symptoms.

The urine assumed the various appearances usually to be met with in fever. In several bad cases it resembled bloody water. The saliva, the secretions from the nose, from the fauces and the matter expectorated, were often tinged with bile.

The skin, and adnata of the eyes assumed various shades of yellow, from a slight tinge to a deep copper color. This symptom was not uniform but in the worst cases it, existed in a greater or less degree.

The dejections, per anum, were equally variable in their character with the matter thrown up from the stomach.—Most generally they were of a dark colour even in cases comparatively mild. In the worst cases they were of the colour

and consistence of pitch, or mixed with blood. In the months of July and August many cases were complicated with dysentery. These varied according as the one or the other disease predominated.

Hemorrhages from the bowels were not unfrequent. This symptom occurring at an early period, although it indicated a violent disease, was not unfavourable. Every case in which it appeared terminated favourably. In the advanced stage hemorrhages took place from the bowels, nose, mouth and fauces; and generally preceded a *fatal termination;* in one case, however, a profuse hemorrhage from the nose and fauces, occurred on the 15th day, and returned at intervals until the nineteenth, attended with full pulse and low muttering delirium, and still the patient ultimately recovered.

The pulse varied not less than every other symptom. In some cases it was full, strong and slow, in others, small, frequent, and contracted, now and then tense, sometimes, irregular or intermitting. In the generality of cases when the disease assumed an unfavourable character, the pulse was found frequent and small from the commencement, or became so before the termination of the disease. This condition of the pulse prevailed from the commencement, in cases manifesting great abdominal irritation. When the brain was the principal seat of morbid action, the pulse was full, slow and sometimes nearly natural.

Pain in the head, stupor and delirium were common symptoms. But in some of the most violent and fatal cases, the disease seemed to spend its force on the abdominal viscera, leaving the functions of the brain unimpaired. This exemption was remarkably perfect in a case to which I shall have occasion again to advert, in which great ravages were found after death, in most of the abdominal viscera.

During the first and the last parts of the season the disease was often complicated with catarrhal symptoms. A cough, pain in the breast, and inflamed tonsils were very common. Sometimes these were the predominant affections throughout, and yet the disease preserved the characteristicks of bil-

rous fever. In two cases all the symptoms of acute hepatitis supervened, a few days after an attack of what appeared to be a common remittent.

Sometimes the access was sudden and violent, in other cases slow and insidious; the disease continuing seven or eight days before it reached its *achme.* These cases were generally more dangerous and stubborn than when the onset was violent.

The duration of the disease was uncertain, and its termination seldom attended with any remarkable crisis. If a critical evacuation ever occurred, it was more frequently from the skin, than from any other part of the body. In every case in which v. section was adopted, under my notice, the blood exhibited a sizy appearance. But I only saw this remedy employed in cases which assumed a decidedly inflammatory character.

A favorable termination was indicated by the exacerbations becoming lighter, the remission more evident, and the stomach less irritable, by the occurrence of a spontaneous diaphoresis, and an improved state of the tongue. The disease frequently terminated in a common intermittent. In such cases the remission became more and more evident, until a perfect intermission was established. Relapses were very common, and it required the utmost care to prevent them. They were more effectually guarded against, by a daily use of laxatives, than any other means which I saw tried. Many persons labored under a torpid condition of the liver, during their convalescence, as was manifested by light coloured fæces, inactive bowels, and frequent and irritable pulse.

The treatment of this epidemic, which I found most successful, consisted in vomiting, purging, bleeding, blistering, the use of refrigerants and diaphoretics, and in exciting a salivation. All of these means were, of course, not necessary in the treatment of each individual case,—though there were some, which, from their obstinacy or violence, required, in co-operation or succession, nearly the whole. How far each

was necessary and proper, let us inquire. Emetics were highly serviceable at the commencement of the disease, and a repetition of them was often required. Frequently, however, there was a spontaneous vomiting, or incessant nausea, and oppression of the stomach, proceeding from a highly irritable state of that organ; when emetics failed to do good, or even did harm. These cases were more readily managed by encouraging the vomiting, at first, by the copious exhibition of warm diluent drinks, by bleeding, by a large blister or sinapism over the stomach, and the frequent exhibition of cathartic enemas. After the use of these means, an anodyne was of service, but, rarely, before. I have not been deterred, in such cases, from the use of the lancet, by a small and frequent pulse; as this, it is well known, will always be the condition of the pulse, when the stomach is the seat of inflammatory irritation.

A curative means of still more importance in the treatment of this disease, was purging; which had to be persevered in through its whole course. Calomel combined with jalap or rhubarb, castor oil, and the neutral salts, were found the best. By these agents, a constant catharsis was kept up, as long as the appearance or acrimony of the alvine discharges indicated a vitiated biliary secretion. There was, however, the same objection to the use of drastic purges, in a highly irritable condition of the stomach, accompanied with incessant vomiting, as has been noticed in relation to emetics. The best purgatives in these cases was found to be one of the neutral salts, combined with calc. magnesia, or an infusion of senna, given in small and frequently repeated doses, with an effervescent draught of supercarbonate of soda and tartaric acid. Purgatives, administered in this way, were often retained, when every thing else was rejected.

Bleeding always did good, if resorted to before the disease was far advanced, when local pain, or abdominal irritation was present. An irritable and oppressed state of the stomach, though accompanied by a small and frequent pulse, more peremptorily required the use of that remedy, than any other

symptom. Indeed, in such cases, it was indispensable. A repetition of v. section during each exacerbation of the fever, for several days in succession, was often practised with advantage. In some cases, the blood was sizy upon the second or third bleeding, when the first operation did not exhibit that appearance. In the earlier stages, it always did good; quieting the irritability of the stomach, and giving an opportunity for administering medicines by the mouth. This, I feel satisfied, is a matter of the utmost importance—a practice that should be fearlessly adopted, as long as the inflammatory diathesis continues, or there are signs of congestion in the abdominal viscera. Symptoms of dangerous debility rarely occur, until the surcharged viscera have suffered the consequences of increased local excitement, or become overwhelmed with blood. This remedy has been denounced as dangerous, and always unnecessary, by some of our neighboring physicians. On this account, I will here notice some of the principal facts and reasons on which the practice is founded.

1st. Nearly every case, terminating fatally, exhibits symptoms of inflammation or congestion before death, and dissections, as far as they have been prosecuted, afford evidence of a similar kind.

2d. The most troublesome symptoms we have to encounter, in the treatment of the disease, arise from an irritability of the stomach, which evidently proceeds from some degree of inflammatory action in that organ; for it is most certainly removed by remedies calculated to remove inflammation.

3d. The augmented and vitiated secretion of the liver, proves that organ to be in a state of increased morbid excitement. This is made still clearer, by adverting to the condition of those laboring under chronic hepatitis, when they are attacked with bilious fever. In these cases, the biliary secretion, before deficient, becomes redundant in quantity and highly acrimonious, and a degree of pain and tenderness, and pulsation, is felt by the patient in the liver, when these symptoms had not been before present.

4th. By a careful examination, a pulsation may be perceived in that organ, in the ordinary cases of bilious fever.

5th. The analogy between acute hepatitis, and bilious fever, is another fact deserving attention in the consideration of this subject. In acute hepatitis there is always a redundant and vitiated secretion of bile. The same occurs in bilious fever.

Finally, a torpid condition of the liver is very apt to follow acute hepatitis. The same is a common occurrence after bilious fever. The similar effects evince a similar previous condition of the organ. In both cases, it has been impaired in its functions;—has lost its tone and energy, from having suffered a high degree of morbid excitement. In bilious fever the liver appears, indeed, to be the centre of the diseased actions; and the acrimonious fluid which it pours out must produce extensive mischief in the stomach and bowels. In corroboration of this opinion, I will briefly relate the history of a fatal case, and the appearances exhibited on dissection.

Not having, originally, been the attending physician of this patient, I am unable to state minutely his situation in the beginning of the complaint. I saw him, however, several times a day for the last six days of his life, and watched the progress of the disease with the utmost care and attention. Previous to the attack, he was in the prime of life and enjoyed vigorous health. During my attendance upon him, there was scarcely a symptom wanting, of those which have been noticed as belonging to the worst cases. He complained, in an unusual degree, of oppression, a sense of distension and a dreadful load in the region of the stomach. That organ was highly irritable, and nausea and spontaneous vomiting returned with every exacerbation of the fever, in spite of every remedy that could be devised. His tongue was at first thickly coated with a dark yellow fur, gradually changing to a brown, and finally becoming black. His alvine discharges were black and highly acrimonious, excoriating the skin wherever they came in contact with it. For some days before his death, he frequently vomited a fluid of the same colour. His complex-

ion, at an early period, assumed a yellow colour, which finally became a deep saffron die. His skin was dry, and the heat of the central parts of his body intense. His pulse was generally small and frequent; and while feeble at the wrist, it beat with great force in the larger arteries. The treatment consisted in vomiting, purging and blistering, in the use of refrigerant and diaphoretic medicines, in the internal and external use of mercury, with the intention of exciting ptialism, and finally, tonics and stimulants. V. section was not resorted to. These remedies failed to produce a salutary impression, and he died on the fifteenth day from the attack. He retained his senses to the last; and a few hours before his death, requested me to examine his body after his decease, and laying his hand on the scrobiculus cordis, said—"You will find something black here."

DISSECTION.

The first thing that excited attention was the yellow colour of the fat and cellular substance, between the skin and muscles. Upon exposing the abdominal viscera, the omentum first presented itself to view. It was of a deep yellow colour: the vessels in places were turgid, and there were several dark coloured spots near its inferior edge. *The liver was enlarged to nearly twice its usual magnitude, and its vessels were engorged.* Its colour was natural, with the exception of some dark spots on its internal surface. Upon cutting into it, several small abscesses were visible; otherwise its texture seemed unaltered. The gall bladder contained about three ounces of fluid, of an inky blackness and ropy consistence, so acrid, that when it came in contact with my hand it produced a distinctly smarting sensation. The stomach contained about a pint of dark coloured fluid, being evidently a portion of the same substance found in the gall bladder, diluted with the water which the patient had swallowed. Its internal surface was smooth, having the appearance of the villous coat being abraded. The vessels were turgid in places,

and several brown spots with red margins were to be seen near the pyloric orifice. The intestines exhibited the same appearances with the stomach. They had similar traces of inflammation and abrasion of the mucous tunic. The kidneys were not altered in their structure. The bladder was nearly empty, and exhibited nothing remarkable, though the patient had several times experienced a suppression of urine, during the few last days of his illness.

Can any individual doubt, but that death resulted from inflammation and its consequences, in this case? It may be objected, that an extreme case is not to be relied on in support of any theory. I do not contend, that inflammation exists in every case of bilious fever; but insist, that when it assumes an alarming or fatal character, it is generally from this cause. The acrimonious fluid poured into the stomach and intestines from the liver, must necessarily excite a degree of inflammatory action, proportionate to the acrimony of the fluid, and the sensibility of the surface to which it is applied. The impression thereby made, rouses the action of the heart and arteries, which still more deranges the secretory function of the liver; and if a remedial power is not applied in time, gangrene and death must ensue. Thus we have a circle of morbid actions, the centre of which is the liver, on which the remote cause of fever seems to make its first impression.

The next remedy to be noticed, is the exhibition of some preparation of mercury, so as to excite ptyalism. This should be resorted to at an early period, if the disease threaten to become obstinate. If deferred until late, it is frequently impossible to affect the mouth. The best way to accomplish it, is to give the submuriate of mercury in such doses as will act smartly on the bowels, and at the same time allow a free use of cold drinks, (when not contra-indicated by an irritable state of the stomach,) and sponge the body freely with cold water. We should watch the first appearance of ptyalism, and as soon as it is manifest, stop the exhibition of the mercury, and promote purging by other means. Excessive ptyalism may thus, in general, be prevented. Mild purgatives,

such as the neutral salts, should be administered daily, while the fever continues, or the evacuations evince a vitiated biliary secretion. It is customary to give calomel in small doses, either alone, or combined with nitre and antimonials; but when a speedy salivation is desired, the other is far preferable.

I had myself an attack of this fever, in the month of July. Retiring to bed, in ordinary health, after riding twenty miles on a very warm day, I awoke, a few hours afterwards, with a severe pain in the head, which increased until morning, when I found myself with a high fever. I took a large portion of calc. magnesia, which not operating in two hours, I took twenty grains of calomel. About the middle of the day, finding the pain of the head growing worse, the stomach irritable and oppressed, my bowels torpid, with a throbbing sensation in my head and abdomen, and some degree of pain and tenderness in the liver, I lost about eighteen ounces of blood. Throughout the whole day I indulged myself with copious draughts of cold water, and used the cold affusion to the head repeatedly. The calomel operated freely in the afternoon, by vomiting and purging. In the evening I took an ounce and a half of salts, which kept up a catharsis during the night. On the following morning, I found mself slightly salivated, and every symptom of the disease changed for the better. My skin was moist, the pain was gone, and my pulse had nearly resumed its natural standard. Although I had no fever after the expiration of forty-eight hours from the attack, I found it necessary to take one or two doses of neutral salts daily for the ensuing week.

If this vigorous treatment were necessary in a person feeble and emaciated, as I was previously to the attack, it is far more so, in one of a vigorous habit. In this manner bilious fever may frequently be cut short in its career, or at least be deprived of every dangerous feature. Death, after salivation, is a rare occurrence, and when it does take place, it proceeds from the deleterious action of acrimonious bile, not carefully purged off, upon the stomach and intestines; therefore purgatives should not be laid aside, until the liver resumes its healthy functions.

Epispastics were frequently resorted to, in the treatment of this disease; but they were rather employed for the removal of certain symptoms, than as a necessary part of the general treatment. There is, however, scarcely an obstinate case of bilious remittent fever, in which these remedies, at some stage or other, may not be beneficially employed. To remove local pain and inflammation, their utility has never been doubted. To obviate debility in the last stage of the disease, they stand on the same undisputed ground. Now, if they can produce the former of these effects, and the liver, as we have seen, is the centre of morbid excitement, an epispastic over the right hypochondriac region should be applied in every stubborn and violent case. When the organ is pained the indication is plain, but when it only manifests functional derangement, the remedy may be resorted to on the same rational principle.

After thorough evacuation from the stomach and bowels, nitre and antimonials may very properly form a part of the treatment; and they will lie easier on the stomach, and contribute more effectually to lessen the distressing heat of the skin and produce a diaphoresis, if administered in effervescing draughts. But they should never interfere with the more important therapeutic agents, purgatives. And, indeed, in that irritable state of the stomach, which almost uniformly attended the late epidemic, antimonials were rarely admissible until towards the decline of the disease.

Nothing contributes so much to the comfort of the patient, as the frequent sponging the body with cold water, or cold vinegar and water. Cold drinks may also be freely allowed, unless, as sometimes happens, they increase the irritability of the stomach. Copious dilution, however, either by cold or tepid water, having a tendency to diminish the acrimony of the contents of the stomach and bowels, from which, as I have said, the greatest danger is to be apprehended, should never be neglected. Unless there be some peculiar circumstances attending the individual case, I have uniformly preferred dilution with cold water to warm. General cold affusion has

not been much employed in this disease, either by myself or my medical acquaintances; but cold affusion to the head, when it is pained, or threatened with inflammation, is a remedy of the greatest efficacy. My own experience convinces me, that it is far more efficient in such cases than epispastics; but in order to obtain the full benefit which it can confer, it should be used in large buckets full, poured over the whole head, and repeated every twenty or thirty minutes, until the pain, heat and throbbing of the temples subside.

Tonics were rarely admissible until the disease was far advanced, or had become decidedly intermitting. While the fever continued, while the tongue remained coated, the skin dry, and the alvine evacuations dark or bilious, tonics uniformly proved injurious. I know of no more difficult point in practice, none requiring more judgment and discrimination in the practitioner, than to determine, in all cases, at what time, in this disease, tonics may be resorted to beneficially. They are active medicines, and will either do good, or harm.—There is often an appearance of debility, arising from a congested state of the viscera, when this class of medicines can only increase, and often fatally, the mischief. Indeed, I have seldom found it necessary or advisable to resort to tonics, in the treatment of this disease; and, as a general rule, they certainly should not be employed before the fever has been much reduced, and the secretions are restored. A dangerous and alarming debility, however, now and then does occur,—a sunken state of the system, from which the patient would never recover without the use of both tonics and stimulants. These, of course, are exceptions to the general rule, and are happily of rare occurrence. When the disease becomes intermitting, tonics are necessary to prevent a protracted course, and subsequently, to save the patient from dangerous relapses. In these cases, they will more certainly contribute to the objects we have in view, if combined with laxatives, or diaphoretics, according to the condition of each patient.

SELECTED REVIEW.

ART. III.—*Experimental Researches on the Influence exercised by Atmospheric pressure upon the progression of the Blood in the Veins, upon that Function called Absorption, and upon the prevention and cure of the symptoms caused by the bites of Rabid or Venomous Animals, &c.* BY DAVID BARRY, M. D. *London*, 1826.—8vo. pp. 174.

From the Medico-Chirurgical Review for October 1826.

The first part of this able and interesting review, of a work which has not yet reached this country, relates to the influence of the inspiratory movements of the Chest, on the motion of the venous blood and the chyle and lymph, in their respective vessels.

Dr. Barry believes these fluids to reach the heart, chiefly, in virtue of the tendency to a vacuum which must necessarily exist in every inspiration. In proof of this position he has performed, both in England and France, a number of experiments on horses and other animals, the histories of which have been already disseminated over this country by the respectable journals of the East, and also by our immediate predecessor, the "OHIO MEDICAL REPOSITORY." We shall, therefore, not reprint that part of the Medico-Chirurgical Review which relates to Venous circulation; but limit ourselves to the portion which investigates the subjects of absorption, and the remedial power of cupping glasses, when applied to poisoned wounds; the whole of which we can not doubt will be read with deep interest.

We take this opportunity to acknowledge ourselves indebted to the Medico-Chirurgical Review, for the analysis of Cooper's Lectures contained in our first number.—EDITORS.]

II. ABSORPTION. The knowledge of absorption may be traced in the history of poisoned wounds. How or when this baleful art originated is hidden from our researches—but it is evidently of the very earliest antiquity—and arrived at a

much greater degree of *perfection* (if such a term can be allowed) in days of yore, than in the present scientific æra.—The arrows of Hercules—the sufferings and death of Chiron, Nessus, &c. furnish so many direct proofs of the knowledge which man had acquired in those remote ages, of the means of destroying his fellow creatures. The *manner* in which the mixture of the poison with the blood was effected, has not been recorded—at least till the times of Celsus and Galen.—These physicians perceived that the veins were the fittest organs through which the matter from abroad could pass into the general system, and hence they recommended that ligatures should be applied above the poisoned wound, if on a limb. This view of external absorption prevailed for seventeen centuries, and doubtless the absorbing power was attributed to veins, arteries, and other vessels in common. In the middle of the eighteenth century, this power was first exclusively confined to the lymphatics. The authority of the Hunters overturned all the opinions of antiquity on this subject. But in recent times, Majendie has demonstrated the error of this exclusive doctrine, and the truth of the older one of venous absorption, as held by Celsus, Galen, Redi, Ruysch, &c. But Majendie did not satisfactorily show the causes which induce or compel the matter deposited on a wounded surface to enter the cavities of the veins, and mix itself with the current of the circulation. Our author thinks that "the notions of a peculiar unintelligible vital power of discernment and appropriation, existing at the ends of the absorbing radicules, can not even be alluded to."

We grant that it is rather difficult for the mind to endow the venous radicules into this elective capacity; but when we consider the peculiar and comprehensive powers of the lymphatics and lacteals, it will be as difficult to deny to *them* at least, such discriminating faculties.

M. Majendie proposed *imbibition* as the mode in which matter was transferred from the surface of a wound to the venous current:—thus, the matter, if solid, is first dissolved in the fluids of the wound, and when the coats of the vessels are

soaked in the solution, that part of it which penetrates to their inside is washed off and carried forward by the current of the circulation. To this doctrine Dr. Barry objects the following difficulties.

"1. There must be a current flowing in the vein through the coats of which the imbibition takes place, else the imbibed matter can not be washed off and carried forward.

"2. If the vein does contain a fluid, the imbibition or passive soaking of its coats may take place at least *as readily* from within outwards as in the opposite direction.

"3. The open mouth of a divided or wounded vein can not become the subject of imbibition under any circumstances, and if the vessel be collapsed and empty, imbibition will take place to no purpose, there being no current to carry forward the imbibed matter.

"4. In all wounds minute arterial and lymphatic branches must be divided and laid bare as well as veins, and as there can be no very great difference in the density of their coats, imbibition may take place through the sides of all, and consequently absorption, if there be a current flowing through their tubes, but not otherwise." 81.

Nevertheless, M. Majendie has unequivocally proved that matters *do* reach the circulation in some way or other, and, therefore, Dr. Barry observes that there must be some agent beyond mere *passive imbibition* to give this unvarying direction from without inwards, to a liquid applied to the surface.

At the present time, some still hold that the lymphatics are the sole absorbents—some, that the sanguiferous veins alone perform this function—some, that both are concerned in it. All know that absorption does take place—a fact that was known two thousand years ago.

In respect to the doctrine of absorption as applied to poisoned wounds, it would appear that little or nothing is said of these inflictions by Hippocrates, although he makes the first allusion to cupping-glasses, in the following words:—"*Cucurbitulæ, quæ eum in usum fabricatæ sunt, ut ex carne attrahant et avellant.*" In the Iliad, however, Machaon is made to suck the wound of Menelaus, which is the earliest record of a vacuum being applied to a wound, whether poisoned or supposed to be so. When the blood-vessels were pointed out as the channels for conveying the poison, a ligature above the wound nat-

urally suggested itself, and as the cucurbitulæ attracted towards them the contents of these vessels, their utility was rather confirmed than otherwise. Accordingly Celsus places the cucurbitulæ unequivocally at the head of all preventive and remedial agents, in cases of recently poisoned wounds, as may be seen in the following passage. "*Utique autem, si rabiosus canis fuit, cucurbitulæ virus ejus extrahendum est; deinde, si locus neque nervosus, neque musculosus est, vulnus id adurendum est.*"

"For the bite of the viper, he recommends that a ligature should be immediately placed above the wound. '*Dein venenum extrahendum est. Id cucurbitula optime facit.*' If, he adds, there should happen to be no cupping-instrument at hand, a circumstance which can scarcely be supposed as likely to occur, '*Homo adhibendus est, qui vulnus exsugat.*"

"These passages, and many others to be found in the same author, fully prove—

"1. That the *cucurbitula* were the chief, if not in his opinion, the only effectual means to be resorted to for the extraction of poison from wounds.

"2. That these instruments were so universally applied to this purpose at the time he wrote, that they were always to be found at hand.

"3. That direct suction by the mouth was, next to cupping, the best preventive, and that either of them was sufficient in cases of viper-bites; for in his directions upon this subject the cautery is not mentioned.

"After this the question of priority in the application of a vacuum to wounds inflicted by the bites of rabid and venomous animals, for the purpose of extracting the poison, can be entertained only by the antiquarian, and no man more modern than Celsus can be at all contemplated in the discussion of it." 86.

Strabo, Pliny, Galen, Plutarch, and many other ancients mention the Psylli, the Marsi, and the Ophigenes, as having the reputation of being born with the hereditary power of curing the bites of venomous serpents. The Psylli always sucked the wound, according to Celsus. It is well known that when Cato commanded an army in Africa, he hired and attached to his camp a certain number of these wound suckers; and it is recorded by Suetonius, that Augustus ordered the Psylli and Marsi to suck the wounds of Cleopatra, with the vain hope of restoring her to life, when she had just expired from the bite of a serpent. Redi follows Celsus to the let-

ter—and Boerhaave, under the head ANTIDOTA, observes that poison may be removed from the body by various means—"in our days," says he, "*hodie per cucurbitulas magnas, validas, sæpe renovatas,*" He was among the last of the mechanical physiologists; for, about this time, the supporters of vital action and the absence of direct experiment upon living animals, produced a total change in the doctrines of external absorption. To the lymphatics this office was exclusively attributed, whilst the sanguiferous veins were refused all participation in this function. The consequent revolution which the treatment of poisoned wounds underwent was equally remarkable. The cupping-glass was laid aside as too mechanical. The lymphatics had taken up the poison by a peculiar *vital principle* inherent in them—their action must, therefore, be modified. Stimulants must be given to induce the exhalents to throw off the morbific matter—irritants must be applied to the wound, on the principle '*ubi stimulus ibi affluxus*' the discharge was to be kept up by every possible means, whilst the vitality of the absorbents was to be destroyed by caustics. The knife and the hot iron were sometimes used; but more frequently by the unlettered cow-leech than by the learned physician. From the days of Celsus to the present, Dr. Barry has not been able to meet with any record of a fair trial having been given to the application of the vacuum, either to the bite of the rabid dog, or venomous snake, although every author who has alluded to either of these subjects invariably mentions *cupping*, but merely as a secondary remedy. Orfila recommends *cupping* as a preventive measure in the bite of a mad dog, but does not mention it in the recent bite of the viper. Majendie and his followers do not appear to have founded any new mode of treatment on the doctrine of imbibition—and how far the injection of tepid water into the veins of animals labouring under hydrophobia may prove conducive to their recovery, is at present doubtful.

As a short resumé we may say that, from the times of Machaon to Celsus, we find but few and imperfect traces of any theory of absorption, while the treatment of poisoned

wounds was hidden and disfigured by religious absurdities of the day—that from Celsus to Boerhaave, the blood-vessels were considered the channels of absorption, and to these vessels, therefore, the curative and preventive treatment of poisoned wounds was chiefly directed. The ideas that have prevailed since Boerhaave are sufficiently known—and now we appear to be coming back to the *practice* of Celsus, as well as to his doctrines.

"Yet, notwithstanding this, and many other modes of treatment equally inefficient and absurd, the plan of cure pursued by Celsus in cases of wounds inflicted by poisoned weapons, or by rabid or venomous animals, was beyond all comparison more successful than the mode of treatment adopted by the best physicians of the present day." 92.

A failure in preventing the ill effects of the bite of a venomous serpent, when suction had been continuously employed was considered so remarkable, that Elianus recorded such an event in the case of a mountebank who was bitten in the arm by an aspis, and who died though he sucked the wound himself. It was recorded that the gums and palate of the mountebank mortified before his death. It is therefore, probable that some ulceration existed in his mouth, which occasioned the failure.

In the second chapter of that part of Dr. Barry's work which treats of absorption, he enters into the questions whether this process can be strictly called a vital function—why it can not take place *in vacuo?* Concluding that the immediate causes or circumstances indispensible to the accomplishment of absorption, are—*First*, A free communication between the matter to be absorbed and the thoracic cavities—*Secondly*, Atmospheric pressure, modified by the expansion of these cavities around one end of the communicating tubes, while the same pressure is free and undisturbed around the other end.

With these data, and granting that both sanguiferous vessels and lymphatics are the organs of absorption, their communication with the thorax being exactly the same as that of the tube in the experiment alluded to, it was natural to pre-

sume that the absorption of any substance, as of a poison for instance, could not take place if the points of contact of the absorbing surface and of the matter to be absorbed, were placed under the influence of a vacuum. To put this to the proof our author procured several different kinds of poison, the fatal activity of which had been well ascertained, such as prussic acid, strychnine, upas tieuté, arsenic, &c. With these and other poisons he experimented on rabbits and dogs, having generally two animals placed under exactly similar circumstances, except that the piston cupping-glass was applied to one, while the other was abandoned to his fate. The animal abandoned invariably perished within the periods stated. The animal to which the vacuum was applied never showed the slightest symptom of poisoning, although the deleterious matter remained in contact with the wounded surface during the space of an hour, two hours, and even so long as five hours consecutively.

"When the poison was conveyed by means of a tube under the integuments to some distance from the opening by which it had been introduced, if the cupping-glass was applied to the sound skin, corresponding to the spot where the poison had been deposited, (the wound being without the bounds of the vacuum,) not only was there no indication that any portion of the poison had been absorbed during the application of the glass, but even after it was taken off, the animal continued for one or even two hours to carry imbedded in his cellular tissue a dose which would infallibly have destroyed him in a few minutes had the cupping-glass not been previously applied.

"In these cases, when I waited for the appearance of the tetanic convulsions, the reapplication of the glass immediately suspended them, and the removal of the poison through an incision in the integuments saved the animal.

"When I applied the cupping-glass over the opening made in the integuments for the purpose of introducing the tube, leaving the poison under the skin outside the bounds of the vacuum, no absorption took place during half or three-quarters of an hour, but as soon as the glass was removed absorption began.

"If during the application of the glass, I made an incision between its edge and the point where the poison was placed under the integuments, absorption went on as if no vacuum were applied." 102.

A number of experiments made before some of the most eminent professors of Paris are next detailed, in proof of the

foregoing statements, and for which we must refer to the work itself. Professor Laennec, who witnessed most of these experiments, drew up a report, in which, after recapitulating the principal ones, he comes to the following conclusions:

"1st. Your committee is therefore of opinion that Dr. Barry's experiments (being the continuation of those by which he has already endeavoured to prove that the venous circulation is carried on principally under the influence of atmospheric pressure) establish, in the most incontestible manner, the influence of this agent on the circulation of the absorbent vessels, the proposition which the author sought to demonstrate.

"2ndly. That the knowledge of this important fact may be considered as a *real discovery*, notwithstanding the theoretical views and vague ideas entertained by some authors, and the empirical administration of suction to poisoned wounds, a practice more common with half-civilized people than more polished nations." 114.

The next suite of experiments are of a still more interesting nature, as exhibiting a still more direct application of this method of preventing poisoning by external absorption. Our author procured a considerable number of vipers from Grenoble and Fontainbleau, and had several dogs and rabbits bitten by these animals. To the bites of some he applied the cupping-glass—to the bites of others, nothing; and, although the animals abandoned did not ultimately perish, the results obtained by the comparison were precisely analogous, as far as regarded the symptoms, to those observed in the preceding experiments—that is, the animals bitten by one, two, and sometimes three vipers when the cupping-glass was applied for half an hour, suffered no symptom whatever of constitutional poisoning; whilst those that were left to nature were invariably attacked with convulsions, stupor, and the dogs by vomiting. Pigeons invariably perished from one bite of the viper, the fatal symptoms generally commencing before the end of the fifth minute; but when the cupping-glass was applied immediately after the bite, they not only showed no signs of having absorbed the venom while the glass remained on, but eventually escaped when the treatment to be noticed hereafter was adopted. We shall introduce a couple of ex-

periments on the bite of the viper, which will give a good idea of the whole.

"On the 29th of September, 1825, in Baron Cuvier's anatomical laboratory, where, with his usual condescension, he was kind enough to permit me to avail myself of the talents and dexterity of M. Rousseau, Jr. one of his principal preparators, a large viper was applied* to the thigh of a half-grown weakly rabbit. The reptile bit twice: a minute drop of blood marked each puncture made by the fangs. One minute after the bites the piston-glass was applied upon the bitten part. M. Rousseau, who held his eye close to the glass whilst I worked the piston, observed a drop of transparent amber-coloured liquid issue from each of the punctures. This was followed by a considerable quantity of reddish serum, which rose into a thin froth, and in fifteen minutes nearly filled the glass with its large transparent bubbles. The vacuum was kept up for thirty-five minutes. When the rabbit was set at liberty he appeared to suffer no inconvenience: the little wounds presented nothing remarkable.

"One hour after this rabbit had been bitten the same viper was presented to the thigh of another, which he bit twice also, drawing blood, as before. The second rabbit was larger and much stronger than the first. A pale yellow spot was noticed almost immediately around each puncture made by the fangs. When the animal was set at liberty the bitten leg appeared slightly paralyzed. Ten minutes after the bite, the whole integuments of the bitten part appeared livid. Half an hour after, the lividity was intense, and had extended to the circumference of half a crown.

"The next day an open gangrenous ulcer occupied the whole of the livid circle, discharging a fetid sanies. The leg and thigh were swelled. Forty-eight hours after the bite, the ulcer was still open, but not so fetid. Seventy-two hours after the bite, the ulcer looking healthy, the limb reduced.

"During all this time, the rabbit first bitten never showed the slightest symptoms of either local or general poisoning. The second rabbit refused his usual food during the first thirty hours after he had been bitten, and looked dull." 125.

The second example which we shall introduce is selected on account of a precautionary measure of considerable importance which is there detailed.

"On the 24th October, two adult rabbits were bitten, each by three vipers, and by each viper three times. To one of these rabbits I applied

"* M. Rousseau applied the vipers by seizing them with a long forceps behind the posterior projecting angles of the head, and placing their nose in contact with the part intended to be bitten, they never failed to bite as often as we wished."

the cupping-glass, which was left on thirty minutes. In this, as in No. 16, I observed a considerable quantity of serous fluid ooze through the skin, and afterwards expand into thin froth with very large bubbles, filling the glass. I now dissected out the skin and cellular substance which had been included under the glass, applying the vacuum again for ten minutes; after which the wound was washed and the lips of it brought together by suture. The rabbit when set at liberty appeared to be in perfect health.

"The other rabbit had been left to his fate. On the 25th, at five in the afternoon, the cupped rabbit was as well as if nothing had happened to him: the wound in the thigh looking exactly as if it had never been touched by a viper's tooth, and inclining to heat.

"The rabbit that had been left to nature hung his ears, and looked very dull: the bitten thigh was much swelled, whilst a large gangrenous livid phlyctena, filled with a thin sanies, occupied the whole of the bitten part.

"On the 27th, the cupped rabbit in excellent health: the wound healing without any appearance of gangrene. The phlyctena in the other rabbit had degenerated into an extensive fetid ulcer. This animal after much suffering finally recovered." 129.

From these and many other experiments, whose results were so uniform, our author comes to the following conclusions, which we can not abridge without detriment, and, therefore, shall give them in the words of Dr. Barry.

"*First.*—That neither sound nor wounded parts of the surface of a living animal can absorb when placed under a vacuum.

"*Second.*—That the application of the vacuum by means of a piston cupping-glass placed over the points of contact of the absorbing surface, and the poison, which is in the act of being absorbed, arrests or mitigates the symptoms caused by the poison.*

"*Third.*—That the application of a cupping-glass for half an hour deprives the vessels of the part over which it had been applied of their absorbing faculty, during the hour or two immediately succeeding the removal of the glass.†

"*Fourth.*—That the pressure of the air forces into the vacuum, even through the skin, a portion of the matter introduced into the cellular tissue by injection; that is, if the skin of the animal be not too dense, as in the dog. (Exps. 16, 20.)

"From these facts we again arrive at the conclusions already established by the experiments detailed in Part I., viz.

"1st. That *the taking up* of matter from the surface by the sanguiferous and lymphatic vessels, and the progression towards the heart of the contents of these vessels, are placed under the influence of atmospheric

"* Vide Exp. No. 4." "† Vide Exp. No. 5."

pressure, in all animals possessing thoracic cavities, and exercising over them the power of alternate contraction and dilatation around that point to which the centripetal current of their circulation is directed.

"2d. That, as the veins and lymphatics communicate with the thoracic cavities nearly in the same manner, the cardiac ends of both must be exempt from atmospheric pressure when the thorax is expanded, and therefore the pressure on the surface and extremities of these vessels being unresisted at this moment, except by gravitation, must not only press their contents upwards, but also force matter from abroad into their open mouths, or porous sides, when stript of their more dense coverings.

"3d. That as the height of the column of lymph exceeds that of the column of blood in the lower cava, by the distance from the lower point of the right auricle to the upper part of the subclavian vein in man, and as the course of the lymph is more tortuous and indirect (from passing through glands) than the course of the venous blood; it follows, that the velocity of the transport of matter from the surface to the centre, must be less in the lymphatic, than the sanguiferous veins, and that the comparative quantity transported by the two sets of vessels must be influenced by the circumstances already noted, and by the relative capacity of the vessels themselves. The difference in the specific gravities of blood and lymph should, perhaps, be also taken into calculation.

"4th. That as *imbibition, transudation, or passive soaking* of a part in a liquid may take place *in vacuo*, neither can be the agent which induces or compels matter deposited on the surface to penetrate into the cavities of the veins; for although the cupping-glass may arrest the current of the circulation in the smaller vessels during the period of its application, and even for some time after its removal, yet if imbibition could force the poison, which had been lying in the wound for hours, into their tubes, the washing of the part after taking off the glass would not save the animal from the effects of a substance which with the simple contact of the atmosphere would have killed him in a few minutes." 137.

In the succeeding chapter Dr. Barry makes some interesting remarks on the comparative absorbing powers of the different tissues—on morbid poisons—and on contagion and infection. He thinks it may be inferred that the absorbing powers of the tissues stand in proportion—*first*, to the pressure to which their veins are exposed—2d, to the freedom of communication with the thoracic cavities—3d, to the permeability of the mouths and coats of the veins—and, lastly, to the number of the veins. Accordingly we find that the membrane of the air-cells of the lungs absorbs with the greatest rapidity, because it unites in the most perfect degree the above conditions. Its veins are the most numerous—their communica-

tion with the central cavity of the thorax is the shortest and most direct—their coats are the most pervious—whilst their contents are forced forward by the whole pressure of the air rushing down the trachea during inspiration. Experiments illustrative of these observations will be found at pages 139-40 of Dr. Barry's Work.

At the opposite extremity of the scale of absorbing tissues stand the osseous, fibro-cartilaginous, and epidermoid. In these there may be imbibition, but not absorption. Between the extremes of the scale may be ranged the subcutaneous cellular tissue—the mucous and the serous membranes. The conjunctiva absorbs freely, its vessels being numerous, and their coats thin.

"These experiments," observes Dr. B. "account for the communication of disease without contact. The infective matter of small-pox is more abundantly and more fatally taken into the system by breathing the atmosphere of the variolous, than by inoculation—the plague, by inhaling the effluvia of the pest-house. In short, whatever poison is capable of being suspended or dissolved in the air as a menstruum, must inevitably pass into the blood of those who respire this air thus infected.—'Qui cum non respirare non possunt, contagium miseri, evadere nequeunt,'"* 143.

Some poisons, as the vaccine virus, and most of those peculiar to brutes, are incapable of being dissolved in the atmosphere, at least in sufficient quantity to produce their usual effects. Others can not be so concentrated as to affect the system through any other surface than that of the air-cell, such as the deleterious gases and effluvia. Some, again, are capable of infecting through all vascular tissues, though most fatally through the lungs, as the virus of small-pox and plague. In all cases, however, there is one common and indispensible condition, viz. "the contact of the poison with the surface through which it is to pass into the circulation." This circumstance, which we have always insisted upon, might check a little those noisy and minute distinctions which are eternally buzzing in our ears between contagion and infection—since

* Galen.

they both come to the same thing in the end. The following passage contains sound reasoning.

"If one infected individual can not furnish enough of virus to charge the atmosphere around him with the seeds of his disease, we know that a greater number can; and if the air be not disposed at one time to hold these germs suspended, we know that at other times it is so disposed.—Therefore, whilst men have lungs constructed as these organs are at present—whilst the mucous surface of these lungs *are* exposed to the contact of every thing the atmosphere holds in solution—and whilst it is certain that the most fatal poisons may be thus deposited on the most rapidly-absorbing tissue of the whole frame, the healthy should be carefully and distantly separated from the infected; nor should they ever, under any circumstances, respire the air which the emanations from the latter may have poisoned.

"From what has been said on the subject of specific morbid poisons, may be seen the incorrectness, nay, even the dangerous tendency of the distinction lately attempted to be established by some writers, between *contagion* and *infection*." 146.

Dr. Barry suggests (and we have no objection to the proposal) that, as the word *infect* and its derivatives clearly convey the idea of something noxious introduced into the system, without quibbling or ambiguity, they should, in sanitary logic, supersede the word contagion and its adjectives.

The sixth and last chapter of the work under review, is on the application of the foregoing principles and experiments to actual practice, in the treatment of poisoned wounds. The measures on which he comments are confined to such as are entirely physical and external. These are. 1mo. The ligature between the wound and the heart—2ndo. The cupping-glass or vacuum—3tio. Excision or scarification—4to. The actual cautery—5to. Protection from atmospheric pressure.

"1. In all cases of superficial poisoning, when the deleterious matter is simply deposited in the wound, the application of the cupping-glass over the point of contact will save the individual, provided it be made with the precautions to be noticed hereafter, and before a dose sufficient to cause death shall have been absorbed.

"2. In cases where the poison has been injected, as, for instance, by the hollow fang of a viper or rattle-snake, though the cupping glass may have been applied, yet as the local action of the venom goes on in vacuo, the parts acted upon should be cut out after the venom has been concentrated and partly extracted by the cupping-glass, which should be imme-

diately re-applied over the wound made by the knife, for the purpose of extracting the contents of the newly-divided vessels from a greater distance than could be done before the operation. After this the actual cautery may be administered, if thought necessary; but never under any circumstances before the second application of the cupping-glass, for this reason,—that when the mouths of the vessels are hermetically sealed by the hot iron, they can give out nothing to the vacuum.

"3. The poisoning that results from the bite of a mad dog, so far as regards the simple deposition of the deleterious matter in the wound, and the total absence of local action upon the wounded tissues, comes strictly under the first, or least complicated class of cases. But the tardiness with which the poison is absorbed, or if absorbed, with which it produces its peculiar effects, entitles it to be considered as a species *sui generis*.

"Fortunately this anomaly does not alter the preventative indications. These are purely physical, and as such must be ever unvaried.—The first thing, then, to be done in treating the recent bite of a rabid dog is to apply a powerful cupping-glass over the wound. This measure supersedes at once the ligature, ablution, excision, &c. during the period of its application, and for a certain time after its removal.* 2. After the cupping-glass has been applied for an hour *at least*, the whole of the parts wounded or abraded by the bite should be freely dissected out.—3. The cupping-glass should then be re-applied immediately for the reasons already stated. 4. The wound should next be hermetically sealed by the actual cautery. 5. The part should be as little exposed to the contact of the air after the slough comes away, and as soon healed up, as possible." 150.

If the first application of the cupping-glass shall have so concentrated the poison, as that the excision of the part will remove it—or, if the second application shall have recalled such particles of it as may have been forced into the wounded vessels too far to be reached by the knife, but not beyond the limits of the influence of the vacuum, "the individual will be as secure against hydrophobia as if he had never been bitten." This, of course, is on the presumption that the nerves have nothing to do with the hydrophobic poison—a presumption which we believe to be correct. But still, as no experiments have been yet made on this curious and fearful poison, we think Dr. Barry is hardly authorised to make so confident an assertion as is contained in the foregoing passage. Dr. Barry thinks that the notion of the hydrophobic poison being

"* Experiments 5—7."

absorbed in the usual manner, but lurking in the system for some weeks before it produces its peculiar effects, is contrary to all analogy. He believes it is with the rabid poison as with others—namely, that "the commencement of the symptoms is synchronous with the consummation of the absorption—and that their repetition is dependent upon its renewal." Certainly the idea of the removal of the poison in the wound is strengthened by the *general* occurrence of inflammatory symptoms in the part a few days previous to the explosion of the constitutional affection. But in very many instances there is no local warning of the dreadful scene which is at hand.

"Under the presumptive impression, then, that in hydrophobic, as well as in other species of poisoning, the transport of the deleterious matter from the wound into the system, and the appearance of the symptoms peculiar to the poison, follow each other as cause and effect—as soon as the cicatrix begins to feel at all tender, or when there is sufficient evidence that the animal which inflicted the bite was rabid, we should immediately apply the cupping-glass, and proceed exactly as in the case of a recent bite; nor should the actual presence of hydrophobia deter us from this proceeding, any more than the presence of tetanic spasm in repeating the fourth experiment." 153.

It may be asked how it is that the cupping-glass should rank so low in the cure of poisoned wounds, seeing that its character has stood unimpeached since the days of Celsus? Dr. B. thinks that the answer is to be found in our ignorance of the mechanism of absorption, and our never having suspected that it was connected with atmospheric pressure. It is probable too, that failure with the cupping-glass was attributable to improper interference with the poisoned wound—an interference which originally consisted in scarifications—actual or potential cautery—free exposure to the air. It is evident that the more exclusively the pressure is directed to the wounded surface, and the little vessels connected with it, the greater will be the probability of their contents being squeezed out into the vacuum. If scarifications surround the wound this object will not be so well attained. The objections to previous cauterization are so obvious that we need

not dwell on them here. The only precautionary measures, previously to the application of the vacuum, are, according to our author, the ligature, not too tight, between the wound and the heart—simple ablution of the part—protection from contact with the air. "Even these measures are only to be used when a cupping-glass or suction by the mouth can not be immediately commanded." We apprehend, that in these days of selfishness, few suckers of poisoned wounds, will be found:—the cupping-glass, therefore, should be in the ready possession of every one—especially of the medical profession. Excision and the cautery can be of use only in proportion to their extent. If they reach beyond the poison they will certainly save, but not otherwise. The particles of poison which may have been already forced further than the boundary of the excised wound, will be sent to the heart with greater rapidity after the operation than they otherwise would have been, (as was proved by Fontana,) owing to the wider mouths of the vessels being now fully exposed to receive the atmosphere within their cavities. The following passage concludes the work.

"When the cupping-glass has been applied for an hour to the poisoned part, previously to removing it with the knife, the contents of all the vessels will have acquired a retrograde direction, and from not being permitted to flow freely into the vacuum, a perfect stasis of the fluids is established; hence the loss of the absorbing faculty of the cupped surface already noticed. (Experiments 5—7.)

"Thus by allowing the first cupping to precede the excision of the part, not only is there a greater quantity of the poison removed, but the danger of a more rapid absorption is avoided, whilst the certainty of extracting a still further portion, or, perhaps, the whole of what may have remained, constitutes an additional and important advantage to be obtained by the second cupping.*

"The advantage to be derived from the actual cautery, after the excision and second cupping, is also of a strictly physical nature. The burning of the little vessel hermetically closes its mouth, and renders its tube incompressible for a certain extent. Its absorbing powers, therefore, are suspended, because the pressure of the atmosphere can neither

* Experiments 22, 23,

force any thing into it, nor compress it upon its own contents, so as to force them forward towards the heart." 159.

We have given such an ample analysis of Dr. Barry's work—especially that part of it which relates to absorption and poisoned wounds, that it would be quite superfluous to say any thing of its merits in conclusion. We confess that we are not converts to our ingenious author's theory of the circulation in the veins—and consequently, in the absorbent vessels;—but, we nevertheless fully believe in the great utility and efficacy of the application of cupping-glasses to poisoned wounds. Whatever may be the power which causes the contents of veins and absorbents to go forward, under ordinary circumstances, towards the heart, there can be no doubt that the removal of atmospheric pressure from the mouths of these vessels when wounded, will cause a retrograde motion of the substances contained in them. The theory of absorption and venous circulation may be wrong, while the application of that very doctrine to practice may be very right. Under this impression, we beg to add our mite of approbation to that which the talented author has already so largely received abroad—recommending, in the strongest terms, the profession to procure for themselves the work, in order that they may be in complete possession of Dr. Barry's views—experimental—doctrinal—and practical.

ORIGINAL REVIEW.

ART. IV.—*Observations on the Animal Œconomy, and on the Causes and Cure of Diseases, By* JOHN GARDINER, M. D. Edingburgh, 1784.

Dr. Gardiner was evidently a man of good sense; and his book contains a number of opinions and speculations which are worthy of attention—either from their intrinsic value, or their identity with many of the fashionable doctrines of the age which has succeeded to that in which he lived. Without troubling our readers with a review, either critical or analytic, we propose to lay before them a few extracts, from which the truth of what we have just said will be apparent.

Much has been written on the subject of marsh miasma, and while some have professed an intimate knowledge of the origin and modus operandi of this agent, others have boldly denied its very existence; and supported their denial by the fact, that autumnal fevers often prevail where the physical circumstances, thought to be necessary to the production of miasma, do not exist. Observing this to be the case, a British army Surgeon, Dr. Ferguson, has lately suggested, that ponds and marshes and decaying organic bodies, are not at all necessary to the production of the miasma which gives origin to autumnal fevers; but that it is developed from the soil. Now this is nothing more nor less than the opinion of Dr. G. promulgated forty years before. His words are the following:

"Although authors appear universally to agree that marsh miasma is the most general cause of fevers, and give the most undeniable proofs of its effects, yet we are not to conclude marshes and fenny places to be the sole sources of this miasma. In such places, no doubt, it is in the greatest quantity and most active. For, I am confident that more or less of it must arise from every place where there is heat and moisture, though it can not properly be denominated marshy, this miasma decreasing in its power, in proportion to the diminution of the heat and mois-

ture to which the ground from whence it arises is exposed. Hence we have little to apprehend from the putrid miasma raised by the heat of the sun, from what may be called the arable lands in this country, unless in seasons remarkably hot and moist, because it seldom has sufficient power of itself to produce fevers, but acts in conjunction with other causes." p. 183.

But it is in reference to the manner in which marsh effluvia and the various infections invade the system and enkindle fevers, that the speculations contained in Dr. Gardiner's book are a full anticipation of the present doctrines of Broussais, and other advocates for the gastric origin of fever. After stating that the profession have recognized four modes in which the system may be supposed to suffer from exposure to a poisonous atmosphere, Dr. G. proceeds to say:

"The fourth manner in which the causes of certain malignant fevers, arising from marsh miasma, human, or specific contagion, are supposed to get into our habit, is by the noxious effluvia taken in with the air in respiration, mixing with the saliva, and, by deglutition, conveyed into the stomach, where, by certain changes brought on the gastric fluids, and their particular stimulus on the nerves of the stomach and bowels, they prove the cause of fevers, differing from one another, according to the nature of the infectious exhalation. This I have always thought to be the most probable way that infections are received by us, and of their acting on our system in the production of fevers.

"As I am of opinion that all putrid substances and specific contagion are capable of acting as a ferment on the saliva and contents of the primæ viæ, I have, in the preceding paragraph, mentioned certain morbid changes brought on the gastric fluids after the infectious matter has been swallowed, and, previous to the accession of the fever. This change, I suspect, takes place previous to the accession of those fevers called nervous, putrid, or malignant, but especially in the fevers known to arise from specific contagion, as the chincough, measles, and small-pox." pp. 196.—7.

The difference in malignity between the small-pox from inoculation and that from exposure to a variolous atmosphere, the Doctor attempts to explain by the aid of the foregoing supposition. The general system he supposed to be disordered by sympathy with the part first affected, which, says he, p. 200,

"Can never be so considerable from any external part of the body after inoculation, as when it proceeds from the stomach and bowels where stimuli of every kind affect the system in general more powerfully, than when applied to any other part of the body.

Subsequently at p. 225, he observes:

"The foregoing observations are applicable to all fevers which are known to be infectious, or which arise from the vapour of putrid animal substances, and also to those occasioned by the putrid effluvia of swamps and marshy grounds in hot season and climates. In all which cases, the stomach and bowels appear to be the parts first affected by the operation of the cause of the disease."

Finally, he says, at p. 229:

"Were it necessary, many other facts and observations might be advanced, similar to those already given, in support of the opinion, that the infectious matter of fevers is taken in with the saliva, and that the stomach and bowels are thereby first affected, and from them the rest of the system. But, when a proof of this kind is made as clear as the nature of the subject will admit, the running over the tedious detail of a thousand testimonies, in corroboration of what has been already proved, must be as tiresome to the reader, as it would be to the writer. I shall, therefore, only observe farther, that the general disorder in the body, which always accompanies the accession of a fever, is more likely to arise from that wonderful extended sympathy which every part of the body has with the stomach and bowels, than to any other cause I can possibly suggest. Besides, those parts which are known to sympathize in a particular manner with the primæ viæ, frequently suffer in a remarkable manner on such occasions, as the head, the vital organs, the lumbar vertebræ, and the limbs." p. 229.

Here then, we have a full recognition of the gastric origin of the various forms of bilious and typhus fever; and of hooping cough, measles and smal' pox. Dr. G. does not claim to be considered as the author of this theory, but speaks of it as already extant among the profession. With what propriety, then, can it be ascribed to Broussais or any other writer or teacher of the present times? They doubtless have rendered the doctrine more plausible, but certainly are not its authors.

On the subject of sympathy, Dr. G. belongs to the school of Dr. Whytte; that is, he makes it a function of the nervous system; and his chapters in support of this opinion might be studied even at the present time with much advantage. In reference to the sympathies of the various parts of the body with the stomach, he has the following observations, with which we shall close our brief and imperfect notice of this book.

"In the *first* place, I shall mention that widely extended sympathy which is so often observed between the stomach and every other part of the body. *Secondly*, The sympathy of the stomach and bowels with the head, *et vice versa*. *Thirdly*, The sympathy of the stomach with the kidneys, uterus, &c. *Fourthly*, That particular sympathy of the vital motions of the lungs and heart with the stomach and bowels. *Fifthly*, The sympathy of the uterus with the mammæ. And, *sixthly*, The sympathy of the heart with the lungs in a most eminent degree, (parag. 13.) From all which it appears, that the stomach is the principal seat of many of the most remarkable sympathetic affections which happen in valitudinary states of the body. Every disorder accompanied with severe pain affects the stomach, whilst this viscus affects, not only in its diseased state, every part of the system, but at other times the effects of healthful stimuli applied to it are instantly communicated to the rest of the body, as when we take food, wine, and medicine." p. 65.

ART. V.—*A Practical Essay on* TYPHUS FEVER. *By* NATHAN SMITH, M. D. *Professor of the Theory and Practice of Physic and Surgery in Yale College.* New-York: Bliss & White, 1824. pp. 88, 8vo.

The author of this little Essay is an old physician of the north; distinguished for an original cast of mind; strongly attached to the profession, and familiar with what it has presented in New England, for the last 40 years:—His facts and conclusions are, therefore, entitled to much attention. We might add, that even the opinions of such a man have claims on our respect; for in Physic as in Physiognomy, opinions are sometimes correctly formed, without our being able to assign the facts on which they rest. Professor Smith, moreover, is an American; his observations were made in our own country; among those of our own physical and moral temperament; and must, if accurate, be more applicable to the American people, than those made in foreign lands.

It is not our intention to make a critical analysis of the Professor's Essay or to pronounce upon it either eulogy or disapprobation; we shall therefore proceed to extract such portions of it, as will give the results of his experience.

On the moot point, of the contagiousness of Typhus, he presents us with the following facts and conclusions.

"That the Typhus Fever is contagious,* is a fact so evident to those who have seen much of the disease, and who have paid attention to the subject, that I should have spared myself the trouble of saying any thing with regard to it, did I not know that there are some physicians in this country, who still dispute the point; one, which I think can be as fully demonstrated, as that the measles, small-pox, and other diseases universally allowed to be contagious, are so.

"The arguments usually brought against this opinion are, that in certain cases, we can not trace the contagion to its source, and that many persons exposed to it, do not contract the disease. These objections might be advanced with equal truth against the contagiousness of all diseases; as it frequently happens, that one or more individuals in a family will escape an attack, though equally exposed as those who suffer from it.

"A few instances, which have fallen under my own observation, would alone be sufficient to determine the question.

"A young man, a pupil of mine, was attacked with the Typhus Fever, from which he recovered with difficulty. Some of his family, who lived about forty miles distant, came and took care of him during his sickness. Upon his recovery, they returned home in good health, but soon after sickened with the same disease, and communicated it to others, who had not been exposed in the first instance. From this, it spread to numerous other families in the vicinity, who had been exposed to the contagion.—In the whole town where this occurred, there had been no case of Typhus Fever for many years, till brought there by the circumstances above related.

"During the prevalence of the Typhus Fever in Thetford, (Vt.) a woman went there from Chelsea, about ten miles distant, to visit and administer to a sister, sick of this disease. Upon her return, she was herself attacked by it and soon after died. Others of her family contracted it of her; and in about four weeks, there were thirty persons taken down with Typhus, all of whom had been exposed to the contagion.

"A young man belonging to Plainfield, (N. H.) who had left his friends, and resided for some time in the western part of the state of New York, returned to his father, who had a numerous family. He found himself unwell before he reached home—was immediately confined with Typhus, and soon sunk under the disease. In about four weeks after, I was called into the family, and found nine members of it sick of the same fever.

"With a knowledge of these facts, and many more, equally to the point, it is impossible for me not to believe this fever contagious, though

* Without going into a discussion upon contagion and infection, I would observe, that by a contagious disease, I mean simply, one that can be communicated from one individual to another.

it may not perhaps be so certainly and readily communicated as some other contagious diseases. pp. 11—12—13.

On the liability of persons to a second attack of Typhus, the author has the following sentence:

"My own personal experience is strongly in favour of the opinion I have advanced of the non-liability of the same individual, to a second attack of Typhus; for during the twenty-five years since I first attended patients in this disease, and in that time I have visited many hundreds, and have witnessed its prevalence several times in the same village, I have never known nor heard of its recurrence in the same person. p. 17.

The following remarks and averments seem worthy of notice:

"The peristaltic action of the intestines is sometimes suspended, and at others preternaturally increased, and whether the stools appear naturally or are solicited by art, they are always liquid, generally of a dark colour and have an unnatural and excessively fœtid odour.

"The latter stage of all severe cases of Typhus is attended with diarrhœa; the stools are frequent, copious, liquid and extremely fœtid. The bowels are often tympanitic, the flatus not passing off with the liquid stools.

"The danger of the disease is in proportion to the violence of the diarrhœa; when the patient has not more than four or five liquid stools in the twenty-four hours, it is not alarming, as it does not seem to weaken him much, but if they exceed that number, serious consequences may be apprehended.

"I have never lost a patient, whose bowels continued constipated through the whole course of the disease, and have never known a fatal case of Typhus, unattended by diarrhœa. p. 36—7.

Can Typhus be cured? On this question physicians are divided in opinion. The benefactions of our science are, certainly, not limited to the actual *cure* of diseases. When we can not supersede a train of morbid actions, we may preserve from destruction the organs in which they rage, until a spontaneous subsidence shall occur. This is nearly the amount of all that we can accomplish in small-pox, measles and scarlatina; and the professor's experience has convinced him that the profession can not do more than this in Typhus.—The following is his testimony on this point:

"During the whole course of my practice, I have never been satisfied that I have cut short a single case of Typhus, that I knew to be such; nor have I seen a solitary instance of its having terminated within fourteen days from its first attack.

"Cases have occurred to me often where the distress and sufferings of a patient have been alleviated in less than half that time; but the morbid action has not ceased, nor the healthy one of the secreting surfaces been established, and a natural appetite restored, within the time above-mentioned.

"It does not follow, because we have no expectation of arresting the disease, that we are to neglect doing any thing. In cases of the other contagious diseases, which are destined to run a certain course, as the small-pox, we often prescribe early in the disease, and with evident good effect, but not with a view to stop or cut off the disorder; for whatever we do, we expect it will pass through all its regular stages, and our prescriptions are calculated only to render it milder and safer, and enable the patient to live through it.

"With the same views, I prescribe for Typhus, both at its commencement and through the course of the disease; for Typhus has a natural termination like other diseases, which arise from specific causes.

"On the other hand, it does not follow of course, that this disease in all cases requires remedies, or that a patient should necessarily take medicines because he has the disease. In other specific diseases, we proceed on the principle of withholding our remedies unless they are called for by particular circumstances, and thus many cases of measles, hooping-cough, and other contagious diseases, go through their course to their natural termination without medicine.

"In cases where the disease is going on regularly in its course, without any symptoms denoting danger, and without any local distress, it is presumable that medicines, especially powerful ones, would be more likely to do harm than good. Although Typhus Fever is a more formidable disease than measles or hooping-cough, yet there are many mild cases, and in such cases, I apprehend that the use of powerful means, with a view of curing the disease, is liable to do great mischief.

"I have seen many cases, where persons in the early stages of this disease were moping about, not very sick, but far from being well, who, upon taking a dose of tartrite of antimony with the intention of breaking up the disease, have been immediately confined to their beds.

"In fact, I feel well convinced, that all powerful remedies or measures, adopted in the early stages of Typhus Fever are very liable to do harm, and that those patients, who are treated with them in the beginning, do not hold out so well in the latter stages of the disease.*" pp. 45—48.

*Happening in company with a physician with whom I was slightly acquainted, he observed that he had adopted a new method of treating Typhus, which I was aware had been prevalent in the vicinity where he lived, and stated that it had proved very successful. Upon my inquiring into his peculiar mode of treatment, he informed me that it consisted in

Upon the much controverted question of Blood-letting in Typhus, the Author has spoken freely. The following paragraphs will serve to set forth his doctrines and practice:

"It has been observed that in certain cases of Typhus, there is great pain accompanied with a sense of fullness in the head, and in other cases, the patient complains of severe suffering in the chest, which is increased by a full inspiration.

"Under these circumstances, the loss of blood, to the amount of from twelve to sixteen ounces, often mitigates these troublesome symptoms, and probably may not only alleviate the patient's suffering, but may enable him to go through the disease with more safety.

"So far as I can judge from my own experience, bleeding does not generally produce any considerable change in this disease; the pulse is not rendered slower by it, and after the faintness, if there is any produced by the operation, disappears, the heat is not perceptibly diminished.

"In some cases, in which I have resorted to this expedient, I feel confident that the pulse became more frequent and the temperature of the body higher, in consequence of the loss of a pound of blood.

"As hæmorrhage sometimes makes its appearance in Typhus Fever, and generally at about the height of the disease: the advocates for indiscriminate bleeding have imagined that taking blood early in the disease will prevent its occurrence. Upon this subject little need be said, since it is next to impossible to disprove the assertion; for my own part, I have never seen any evidence of its truth.

"In the autumn of 1812, Professor Perkins, now of New-York, and myself, attended between fifty and sixty cases of Typhus in the vicinity of Dartmouth College, and many of them students of that institution.

"Of the whole number, which came under our care, one only was bled, and that on account of a sense of fulness in the head, of which he complained.

"This patient had afterwards a hæmorrhage from the bowels, which was pretty profuse, but he eventually recovered.

"This symptom did not occur in any other of our patients, of whom we lost but one.

"I am sensible that it is not safe to rely on one fact alone in making up an opinion on a practical subject. This case is mentioned only to

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giving his patient milk and water, and nothing else, through the whole course of the disease, and affirmed that he had treated quite a number of patients, and had not lost a single one since he had adopted this mode of treatment.

I take this to be a confirmation of my opinion, that powerful remedies are not properly used in this disease, unless called for by particular circumstances, and these circumstances are more rare than is generally supposed.

show that bleeding does not always prevent hæmorrhage; and from the success of our practice, it would seem that blood-letting is not so essential, as some would persuade us to believe.

"That patients often recover from this disease after blood-letting has been practised is an unquestionable fact, and the inference which should perhaps be drawn from it, in conjunction with the facts mentioned above, is, that the loss of a moderate quantity of blood in Typhus, is not of itself dangerous, and in a majority of cases, may be allowed with impunity. There are cases however in which it may be essential to the patient's safety, while in others it may prove highly injurious. The judgment and skill of the physician is necessary in each individual case to determine the propriety of its adoption, as well as the quantity which should be abstracted.

"I have never seen any benefit from blood-letting in Typhus Fever, where there was no local inflammation or congestion, that particularly called for it.

"The symptoms, which would induce me to bleed, are, uncommon pain in the head, accompanied with great heat in that part, a sense of fulness, and a throbbing of the temporal arteries, or marks of congestion in the viscera of the thorax, such as pain in one or both sides of the chest, increased by a full inspiration.

"The state of the pulse also should be considered before we bleed: a very frequent one does not indicate blood-letting, on the contrary, in such cases I have seldom or ever seen this evacuation attended with advantage.

"Many of the French physicians prescribe leeches instead of general bleeding, and where they can be procured, the remedy may be tried with safety, as there is less to be apprehended from the loss of equal quantity of blood by leeches than in any other way.

"The blood, drawn in Typhus, seldom shows a buffy coat, and as far as I can judge, is found rather darker coloured than in ordinary cases of active inflammation." pp. 52—56.

The Author's views relative to Emetics in this malady, are embraced in the following extracts:

"In cases of simple mild Typhus, where there is no nausea at the stomach, no pain in that region, where the heat is moderate, and the pulse not greatly altered in frequency, I am clearly of opinion that we had better leave the disease to cure itself, as remedies, especially powerful ones, are more likely to do harm than good. In such cases, the patient gets along better without medicine than with; all that is required is to give him simple diluent drinks, a very small quantity of farinaceous food, and avoid as much as possible all causes of irritation. The symptoms, which require the use of emetics, are, nausea, sickness and oppression at the stomach." pp. 56—57.

"From the bad effects, which I have seen result from the use of anti-

mony in this complaint, I have long since neglected it in my practice, and have substituted for it the ipecacuan, eupatorium, or the sulphate of zinc." p. 58.

To Cathartics in Typhus Fever, our Author does not seem to be partial, and evidently prefers laxatives to drastics:

"If a strong drastic cathartic be administered, it is often followed by a diarrhœa, which, though not always injurious when moderate, is always liable to become so. I have never known a patient die of Typhus, whose bowels were slow and required laxatives to move them, during the course of the disease. Laxatives therefore and not purges are required in this affection; and the milder they are, if they have the effect to excite the bowels to throw off their contents, the better, and even these should not be used too freely. If the bowels are shut up too long, their contents become offensive to the intestines, stimulate them violently and a diarrhœa is more likely to follow, than if the bowels had been excited by a gentle laxative. Laying aside the strong purgative drugs, we have a considerable number of mild cathartic ones to select from; epsom salts with senna, rhubarb, alone or with a very small quantity of calomel or ipecacuan given in small and repeated doses, are among the best articles of this kind." pp. 60—61.

In regard to Blisters, the following is his testimony:

"Blisters have long been employed in fevers under the general impression that they were useful, without any very definite notion of the mode by which they produce a good effect, and without waiting for any particular symptoms indicating their use. So far as my experience extends, they do not produce any very considerable influence on the disease; like bleeding, they will sometimes relieve local pains, when applied near the part affected, as on the forehead or back of the neck when there is pain in the head—on the breast, when the chest is affected. In most cases if they do no good, they produce no bad effect; but when there are petechiæ, or a disposition to hæmorrhage, indicating great debility in the system of capillary vessels, they are liable to do harm, for in such cases, the blistered surface often becomes black and gangrenous. Upon the whole, we can not consider blisters as possessing much influence in Typhus Fever, and they may in most cases be dispensed with." pp. 61—62.

His opinion relative to Sudorifics, may be collected from these sentences:

"As there is more or less of sweating in the decline of most febrile diseases, and as a general perspiration is often accompanied with other symptoms of amendment, it has been looked upon as the natural cure of the disease. Under this impression, it has been a pretty universal practice to encourage sweating; but with respect to the grounds upon which

this practice is founded, it is a question, whether the effect has not, in this case, been mistaken for the cause; that is, whether the sweating is not the effect of the amendment, rather than the cause of it; and if so, it is still more questionable, whether sweating, produced by art in the beginning of the disease, would be attended with good effects. In all cases, where I have seen this sweating regimen adopted, especially when much external heat has been applied, the practice has been obviously injurious." pp. 62—63.

Of his remarks upon the use of Opium, we shall transcribe but the concluding:

"Upon the whole, opium may be used to advantage under certain circumstances in Typhus Fever, but can not be considered as a specific in any stage, and is at best but a doubtful remedy." p. 65.

On the efficacy of Mercury in the cure of Typhus, the Author has spoken with freedom; and after referring to the opinion that the mercurial action must necessarily supersede the typhus, he has the following remarks, which, notwithstanding the copious extracts already made, we shall not apologize to our readers for transcribing:

"It was always acknowledged by the advocates for this practice, that in some and very severe cases, and those in which medical aid was most necessary, the mercury would not have its usual effects, and ptyalism could not be produced, and it was further confessed that in such cases if the mercury was pushed to any considerable extent, it produced a very bad state of the mouth, occasionally terminating in gangrene of the gums. I have had several cases of necrosis of the under jaw, where I was compelled to remove a considerable portion of that bone, which had died evidently in consequence of an inordinate use of mercury during this fever. In other cases, where calomel has been used early in the disease, and the mouth has been as favourably affected as could be wished, the disease nevertheless has run on forty or fifty days, and sometimes terminated fatally at a very advanced period. In some instances, after the mercury had affected the mouth, there has been a copious discharge of tough, ropy mucus from this part, which has been kept up for a long time after the other specific effects of the remedy had ceased. This vitiated discharge of saliva is often accompanied with a vitiated secretion of the gastric fluid, and attended with a total want of appetite, and a constant ejection of every thing taken into the stomach. Such patients have frequently recovered with difficulty, eight or ten weeks after the commencement of the disease. I have been consulted in many cases of this description. Upon the whole, mercury can not be considered a specific in Typhus, but may be an useful auxiliary in certain cases, that is, the blue pill or a small portion of calomel, combined with some other medicine, may be used

with advantage. A small quantity of calomel with opium has in some cases checked a colliquative diarrhœa; and a grain of the same joined to five or six of rhubarb, has done very well as a laxative." pp. 66—68.

We pass over the Author's brief and rather condemnatory observations on Cinchona, the Bitters, the Alkalies, vegetable and mineral Acids, and the neutral Salts, to extract at some length his more important remarks on the efficacy of cold air and cold water:

"The heat may be lessened by covering the patient lightly, and admitting cool air into the room, when the season of the year will admit of it, or by admitting the air in contact with the skin, by raising the bedclothes on one side of the bed, and bringing them down suddenly again; in this way we can cause a current of cool air to pass over the body, which will conduct off the heat and greatly refresh the patient.

"But the most effectual method of reducing the temperature of the body is by the use of cold water, which may be taken internally, or applied externally. When persons, sick of this disease, desire cold water to drink, it should never be denied them—they should be allowed to drink *ad libitum*. The quantity of heat abstracted from the body, by the water which they will drink, however, is but small, and except in cases where, by its influence on the stomach, it produces perspiration, its effects are very trifling.

"The only effectual method of cooling the body, in these cases, is by the use of cold water applied externally; by this means we can lessen the heat to any degree we please. Different physicians have adopted different modes of making the application. Some advise to take a patient out of bed, pour buckets of water upon him and then replace him again; while others prefer sponging him with cold water. We have cases, where cold water would be of service, in which our patients are too much reduced to be taken out of bed and placed in a sitting posture without injury. In these cases a different management will be necessary. The method, which I have adopted, is to turn down the bedclothes and to dash from a pint to a gallon of cold water on the patient's head, face and body, so as to wet both the bed and body linen thoroughly. It is better that he should lay on a straw bed when this is done, it is not however essential. If his body should be very hot, he may be turned upon his side, and the water dashed upon his back.

"As soon as his linen and the bedclothes begin to dry, and the heat in the head and breast begins to return to the surface, the water should be again applied, and in this way the heat may be kept down to the natural standard or rather below, on the surface, so that the skin may feel rather cool to the hands of a healthy person.

"It is not very material what the temperature of the water is, if it is below blood heat, excepting the shock given by its first contact, which is

cases where there is much stupor or coma, is of some importance; in general, the effect is produced chiefly by the evaporation.

"All additions made to water used for this purpose, such as vinegar, spirits, &c. are injurious. The former, on being evaporated on the surface of the body, covers it with a thin pellicle, formed by the sediment, which makes the skin feel stiff and unpleasant, and spirits evaporated about a sick person produce an offensive odour and likewise leave some impurities on the skin and clothes.

"When water is used to wash the body, as is often necessary in this fever, soap, or the carbonate of potash may be added, but when used to reduce the heat alone, pure water will be found best.

"When the temperature of the body is such, that it does not require the general application of cold water, still it may be occasionally applied with advantage to the head and face.

"Whenever there is any dryness of the lips, teeth or tongue, it may be relieved by letting water, slowly squeezed from a sponge or cloth, fall on the mouth and over the whole face; this should be repeated often enough to keep the mouth clean and moist.

"I have produced a good effect by laying a piece of thin loose muslin over the face, so as to have the air drawn through it in the act of inspiration, at the same time keeping it constantly wet with cold water; in this way, the vapour inhaled into the lungs, proves very grateful to the patient." pp. 72—76.

On the subject of Diet, the authors remarks are concise and present little of particular interest; we shall, therefore, copy nothing under that head, but conclude our extended notice of his work, by quoting his very judicious, tho' much neglected instructions relative to the general management of nursing patients in typhus fever:

"When an individual is first taken sick with Typhus Fever, we should expect a disease of considerable length, and make our arrangements accordingly. If the thing is practicable, he should be kept in a spacious room, the larger the better. His bed should be of straw or husks, especially if it is in the warm season; and it should not be placed in the corner, but brought out into the room. We should contrive to have a current of air pass over the bed by means of doors and windows. It is well to have a chimney and fire-place in the room, and in the night when the air is very still, (though the weather should be warm,) a small fire kindled with a little dry wood, so as to cause a current of air up chimney, and by that means often change the atmosphere of the room, will be found of service. In the warm season of the year, the windows should be kept open night and day. All the furniture should be removed, except such articles as are required for the patient's use. The windows should be darkened, or something opposed to the light, in such a

way as to still admit the air. The room should be kept as quiet as possible, since noise is injurious, and no more persons should be admitted than are necessary to take care of the patient, which will, if he is very sick, require the labour of more than one.

"The room should not be carpeted, and the floor should be often washed with pure water, or soap and water, and in the hot seasons, it, as well as the walls, may be kept wet with water during the heat of the day.

"Cleanliness is absolutely essential to the patient's comfort, and no dirty dishes or useless medicines or food should be suffered to remain in the room. All excrementitious matter should be removed immediately. In the warm season of the year, the bed and body linen should be changed every day, and in the cold, every other day at farthest.

"The patient's body and limbs should be cleansed every day with a piece of sponge and warm water or soap and water. If a male, he should be shaved every day or every alternate day, and if a female with long thick hair, it should be cut off or thinned, so as to leave but little of it the full length." pp. 83—85.

SELECTED INTELLIGENCE.

1. *Important Toxicological Experiments.** The word antidote was formerly employed to designate the substances, supposed to possess the property of counteracting in the animal economy the deleterious effects of certain poisons; but, of late years, toxicologists not finding any of these precious medicines stand the test of experiment, have restrained the acceptation of the word, and applied it only to such chemical agents as are capable of rapidly decomposing or combining with the poison, and of transforming it thus into a new compound, the action of which is no longer dangerous. By substances, possessing these qualities, it is impossible to act upon the poison that has already been absorbed, or to diminish the effects it may already have produced on the digestive canal, &c. but one may hope to render innocuous that portion of the deleterious substance still remaining in the stomach; and to preserve life by putting a stop to the action of the poison before it has continued long enough to produce fatal effects.

It is in this manner, that according to Messrs. Dumas and Milne Edwards, the new method of treatment communicated to the Philomatic Society of Paris, by those gentlemen, on the 19th of August, may be productive of the most beneficial effects in numerous cases of poison. It is founded on the known innocuity of metallic copper, mercury, lead, &c. many of the compounds of which are most deadly poisons; and on the property which iron possesses of decomposing the salts of these metals, and of reducing their bases. Thus, when a piece of iron is placed in a solution of acetate of copper for example, the salt is quickly decomposed, and copper in a metallic state deposited on the surface of the iron.

* On the use of iron as an antidote for most of the poisons belonging to the class of metallic salts. By Dr. H. Milne Edwards, and Mr. J. Dumas, Professor of Chemistry.

As yet the efficacy of this substance has only been tried by Messrs. Dumas and Milne Edwards in cases of poison by verdigris, carbonate of copper, acetate of copper, sulphate of copper, and corrosive sublimate, but it is probable that it will be found equally useful in many other cases. All toxicologists agree, that 12 or 15 grains of acetate of copper always destroy a dog in the space of a few hours, provided the œsophagus be secured so as to prevent the poison from being rejected. In the experiments of Messrs. Dumas and Milne Edwards, from 15 to 50 grains of that compound were administered in the same manner, and about an ounce of iron filings injected into the stomach before or immediately after the symptoms denoting the deleterious action of the poison had begun. The œsophagus was then tied as in the former cases, but the animals instead of expiring in the space of three or four hours, were, in general, by that time, pretty well recovered from the effects of the poison, and survived 5, 6, 8, days or longer; so that their death was evidently occasioned only by the ligature of the œsophagus. In one experiment the ligature was taken off the day after the poison had been given, and the wound closing sufficiently to permit deglutition, the animal recovered perfectly, and 16 days after was made use of for another experiment. After the administration of verdigris, carbonate, and sulphate of copper, the use of iron filings was equally successful; but, with the last of these salts, it was found that the addition of a small quantity of vinegar rendered the action of the antidote much more certain. The same substance administered in the way we have just mentioned, equally hindered corrosive sublimate given at the dose of 12, 15, or 18 grains, from producing death, as is constantly the case when given alone.

The experiments of Messrs. Milne Edwards, and Dumas, not being as yet published, we have not yet been able to lay before our readers all the details necessary to enable them to judge of the practical use of this new method of treatment in cases which unfortunately so often baffle the skill of the physician; but the importance of the subject induced us to insert the above communication, and as soon as it is in our power, we will return to the subject and examine it with all the attention it dererves.

Med. Chir. Rev. for Oct. 1826.

2. *Experiments on Pulmonary Exhalation.** The great rapidity with which æriform and certain volatile substances, when introduced into the veins of a living animal, are expelled by pulmonary exhalation, is a fact fully established by daily observations and by the researches of some French physiologists. In the paper read by Dr. Milne Edwards at the Academy of Medicine of Paris, the 26th of July, the authors relate the experiments they performed, in order to ascertain whether the suction which accompanies each dilatation of the thorax is not the principal cause of this exhalation being so much more rapid in the lungs, than in the other parts of the body; on the same principle as we find, by the interesting researches of Dr. Barry, that absorption is most materially influenced by pressure.

In one experiment, Messrs. Breschet and Milne Edwards injected some camphor, dissolved in alcohol, into the abdomen of a dog, and, four minutes afterwards, found the breath of the animal strongly impregnated with both these substances. They next repeated the same experiment, but with this difference, they introduced a tube into the trachea, laid open the thoracic cavity, and kept up respiration by means of a bellows. The mechanism which makes the thoracic cavity resemble a suction pump, was then destroyed; and, although the artificial respiration was kept up during an hour, there was no smell of camphor or of alcohol in the air expired from the lungs; at the same time, however, a cupping-glass being applied to the exterior surface of the muscles of the abdomen, the smell of camphor soon became perceptible in that part. In a third experiment, essential oil of turpentine was thrown into the arteries of a dead animal, and, on opening the thorax, the abdomen, &c. the exudation of that substance was found to have taken place in all these parts. By injecting a small quantity of essence of turpentine into the femoral vein of a dog, the thorax of which had been previously laid open as in experiment No. 2, and the respiration carried on in the same manner, the exhalation of turpentine took place equally in the abdominal and pulmonary cavities. But when the same operation was performed on a dog of which the thoracic pump

* By Messrs. Breschet and H. Milne Edwards, M. D's.—(*Private Correspondence.*)

was left entire, the essence escaped with much greater rapidity by the pulmonary exhalation, and no trace of it could be detected on the surface of the peritoneum.

From these experiments, and from some others of the same tendency, the authors draw the following conclusions:

1. Those substances which do not pass easily through animal tissues by imbibition, after having been introduced into the circulating medium are no longer exhaled by the lungs as soon as the action of the thoracic pump is destroyed; whereas, those same substances would be soon completely expelled by that means if the suction produced by the dilatation of the thoracic cavity was allowed to continue as usual.

2. That when substances which pass through animal tissues with great facility, (as is the case with essence of turpentine,) are mixed with the blood, they are equally exhaled in all the parts of the body abundantly supplied with blood-vessels, provided the thoracic pump be destroyed; but that when, as in the usual state, the suction produced by the action of that organ is uninterrupted, the exhalation takes place only in the parts subject to the influence of that power.

3. That it is, consequently the mechanical action above alluded to, which occasions the rapid exhalation by the pulmonary surface of water, alcohol, camphor, essence of turpentine, and Leven's gases introduced into the circulating medium.

In a subsequent paper, Messrs. Breschet and Milne Edwards intend examining the influence of that action on the other phenomena of respiration. *Ibid.*

3. *Hydrocyanic Acid.*—M. Dupuy had given seven drops of this acid to a horse, in order to destroy him. When he was at the point of death, he was rapidly restored by the administration of a dram of carbonate of ammonia. *Bull. Univ. Nov.* 1826.

4. *Cobalt in Missouri.*—Messrs. Troost and Lesueur announce the discovery of an ore of Cobalt in this state, yielding, on analysis, "upwards of seventy-five per cent. of Cobalt. If it be abundant, which there is reason to believe it is, the discovery is of very great value."—*New Harmony Gazette.*

ORIGINAL INTELLIGENCE AND NOTICES.

We have received several papers from respectable physicians, detailing modes of practice, and beneficial results, which, although not unknown to the profession, deserve to be announced. It is not, in general, necessary to publish such communications *in extenso*, and we shall, therefore, limit ourselves to a notice of their contents.—Ed.

1. Amputation of a part of the foot. John Slavens, M. D. of Mount Sterling, Kentucky, in 1825, had occasion to amputate a part of the foot. Gangrene had succeeded to the violent bruise, and metatarsal luxation, that were produced by the fall of a forge-hammer upon the top of the foot. Finding the cuneiform bones diseased, and the os cuboides fractured transversely in the line of the scaphoido—cuneiform articulation, he made his amputation *through that joint and the fissure of the broken bone.* The flap was formed out of the soft parts beneath, so as to place the escar upon the top of the foot. Nearly the whole wound healed by the first intention, and in four weeks the patient was quite well. By the aid of a shoe, with its anterior part filled with cork wood, and a plate of steel between the soles, his patient was able to walk so well, that an ordinary observer would scarcely perceive him to be lame.

Dr. S. does not distinctly inform us whether it was his design, if he had not met with the fracture of the os cuboides, to have sawed through the bones of the foot without reference to sutures; or to have amputated at the junction of that bone and the scaphoides, with the astragalus and os calcis, in the manner first practised by Chopart; he seems, however, to have had the former operation in view; and Sir Astly Cooper expressly prefers it to the method of Chopart, as producing "less irritation and danger." But is not the operation which Dr. S. was led to perform, in consequence of a fissure in cuboid bone, preferable to either? By sawing through that bone only, and completing the operation with the knife, passed along the scaphoido—cuneiform junction, less violence would seem to be done, than by carrying the saw through the whole bony frame work of the tarsus; while the stump produced would approach sufficiently near to a plain surface, to admit of being well covered. On the other hand, it possesses in its results some obvious advantages over the mode proposed by Chopart. Thus it saves to the patient half the cuboides and the whole of the scaphoid bone, leaving the base of the limb more extensive, than after his operation; and it leaves untouched the principal insertions of the tibialis posticus muscle, which are necessarily destroyed by the removal of the os scaphoides and whole of the cuboides, and thus preserves more of the extending power of the foot; as well as the power which sustains the body, when from any cause it inclines too far in the direction of the affected side.

2. Oil of turpentine as an external irritant. Jno. W. Monett, M. D. of Washington, Mississippi, is a strenuous advocate for the oil of turpentine, as an external irritant. He regards it as preferable in a great number of cases, to cantharides, mustard, capsicum, nitric acid, alcohol, and other therapeutic agents of the irritating kind. He finds it to operate more speedily, than the first of these articles, and without the increased secretion which it produces; while the excitement that is spread abroad in the system, he thinks more considerable and healthy than that from most of the others. His method of applying it is first to rub the part he intends to irritate until it becomes somewhat excited, when he binds upon it a piece of flannel wet with the warm oil. In eight or ten minutes a glowing sensation is felt in the part; and this is soon followed by a sense of heat not unlike that excited by a blazing fire. The flannel is then to be removed, and may be re-applied if necessary.

The Doctor informs us that employed in this manner, he has found the oil of turpentine of great use in typhus fever, in the irritable stomach attendant on bilious fever, in cholera, in puerperal fever if applied to the whole abdomen, in pneumonia, in rheumatic affections, and in inflammations of the joints from various causes.

We are aware that it may be said, that any other counter irritant will produce the same beneficial results in these cases, for that they all act alike. But is not this a *petitio principii?* Similarity and identity are different things; and while many therapeutic agents are similar in their effects, no two, it may be safely affirmed, are identical. Among those which are classed together, there may be such varieties of action as to render one far preferable to another in particular cases. It is a gross conception of the animal economy and of the *modus operandi* of medicines, to suppose that every local counter irritation exerts the same kind or degree of influence on the system at large. Some disturb the healthy functions, others exalt them into greater energy. Let physicians then condescend to make observations on this subject, and learn to discriminate with precision. It is a case to which the trite maxim, *experientia docet*, is peculiarly applicable.

Although unintentionally drawn into these hasty remarks, we shall extend them through another paragraph. In the advanced stages of fever, when the circulation and excitement of the extremities are greatly reduced, it is not uncommon to witness attempts to restore them by the application of some of the irritants enumerated above; but the practice is generally unsuccessful. In all such cases nothing is so much to be relied upon as actual heat, applied in such manner as not to promote evaporation. Other irritants may prevent the extremities from becoming cold; but can seldom restore their temperature after it is lost. When this end has been, to a certain degree, accomplished by the aid of caloric, other stimulants augment the effect, and may render it permanent.

3. COLD WATER AND MERCURY. The two first articles of this number are from regularly educated and respectable practical physicians—Dr. Harrison and Dr. Dunlavy. A leading object with the former is to show, by the citation of facts, the danger to those who are taking calomel, of drinking cold water; while the latter strongly recommends both its internal and external use under similar circumstances. If this contrariety of opinion and practice were limited to those gentlemen, it would be of no great moment; but we well know that the profession at large, in this country at least, are divided on the same subject. Should not the causes of this opposition be ascertained? Is it impossible to decide upon the effects of a patient's drinking cold water, when under the influence of a mercurial preparation? The salutary effects of calomel on the constitution are indicated by irritation of the mucous membrane of the mouth and of the salivary glands, producing increased secretion of saliva. Superadded to these, or in place of the latter, we occasionally have sloughing ulcers of a dangerous and even fatal character? The questions for solution are—first, whether the use of cold water, or exposure to cold air, will promote the salutary action of mercury upon the mouth; secondly, whether the ulceration of which we speak, is more likely to supervene under such indulgence and exposure, than when the patient is subjected, exclusively, to a warm regimen. We have known physicians who denied to cold water any influence over the operation of calomel, *because* they could not perceive *how* an influence could be exerted. But, in practical medicine, this mode of disposing of difficulties is not allowable. However incapable we may be, in many cases, of comprehending the manner in which one medical agent modifies the action of another, we hold the proposition to be universally true, that when brought to act simultaneously upon the system, they do modify each others effects; and we believe, therefore, that the action of calomel *may* be different when the patient drinks freely of cold water from what it is when he refrains. But the kind and degree of this influence are to be ascertained. It seems to be generally agreed, that the effects on the mouth, of a given quantity of calomel, are greater in the north than the south, and this has been referred to, equally, by those who seek the means of facilitating the salivary action of that medicine, and by those who wish to avert that action. We must not, it is true, confound the temperament or diathesis of the inhabitants of the north, produced by the continued impress of a colder atmosphere, with the momentary influence of large draughts of cold water, or its sudden application to the surface. Still we think it will be admitted, that in this climate the patient, in the use of calomel, who is freely exposed to the impress of cold water, both internally and externally, is more likely to have a "sore mouth," than he who is not thus exposed. Now when this exposure promotes a simple ptyalism, we regard the co-operation as salutary; but when the ptyalism is complicated with sloughing ulcers, the termination is often fatal. The use of cold water, then, by a patient who is taking mercury, may do either

good or harm—it has done both; and, according to the experience of every physician, will be his estimate of the practice. In these circumstances the *desideratum* is a criterion by which we may decide, before hand, upon the effects which, in every case, are likely to result from the practice; and it is to this point that we respectfully invite the attention of our brethren.

For ourselves, we do not pretend to have made any new observations; but there are some classes of patients in whom the practice seems to us to be, in general, contra indicated:

1. Children,—to whom it is often necessary to administer large and repeated doses of calomel; but to whom a salivation, connected as it generally is, with ulceration, sometimes proves mortal, and is always dangerous.

2. Women,—who do not bear the application of cold water so well as men; but are apt to become morbidly irritable under its use; and in that condition the effects of calomel are almost always prejudicial.

3. All persons, male or female, who have the pituitous or lymphatic temperament highly developed; and consequently, all those who are subject to, or labour under hysterical affections.

4. Patients affected with incurable chronic diseases of every kind.

5. Persons of all temperaments, ages and sexes, who are ill with typhus fever.

Those, on the other hand, who have seemed to us most safely and beneficially, to use calomel and cold water, have been males after the age of puberty, of a sanguine or bilious temperament, and afflicted with such inflammatory maladies, as call for, or admit of the application of the latter remedy. In such cases, we hold the practice under consideration to be sound.

With these remarks, in which we have aimed at little more than to state the subject for inquiry, we leave it to those who may regard it as worthy of investigation.

4. Medical Appointments. John E. Cooke, M. D. of Winchester, Virginia, has been elected Professor of the Theory and Practice of Medicine in Transylvania University, in place of Dr. Drake, resigned. Dr. Cooke is advantageously known to the Profession by his writings on Bilious Fever.

John Buckler, M. D. one of the most respectable of the younger Members of the Profession in Baltimore, has been appointed Professor of Surgery in the University of Maryland; Professor Davidge having been transferred to the Chair of Anatomy, rendered vacant by the resignation and return to Europe of Dr. Pattison.

[*The delay in issuing this number enables us to announce the above recent appointments.*]